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Review of the Evidence as to the Nutritional State of Children in France*

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MANY divergent reports have been circulated in this country during recent months respecting the nutritional state of children in France and other occupied countries of Europe. It is important that the American people, and especially those who are to be responsible for the rehabilitation of children in need in Europe, should have as accurate and definite knowledge of existing conditions as present information permits. Unfortunately, most of the published reports contain generalizations which appear to represent personal opinions lacking factual evidence.

On the one hand, there have been references in the lay press and in relief propaganda literature to the starving millions in German occupied countries. On the other hand, reports from parts of France and Italy thus far liberated indicate surprise at the general well-being of the people in these regions. The discrepancies between these general statements and the few reports based on careful study leave considerable doubt as to the accuracy of the former. Whether one is favorably or unfavorably impressed by the appearance of the children in a foreign country depends in some measure upon whether or not the observer had been familiar with these countries before the war, as well as upon whether he was competent to appraise the nutritional status of children. Such appraisement is a difficult undertaking, even when time and facilities are available for making careful examinations. However, disagreement between reports from different sections of France or between France and neighboring countries may represent actual differences in local food supplies and health conditions. As examples, most rural areas in France probably have suffered far less than the larger French cities, and French children on

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the whole have probably suffered less than Belgian children.

When attention is confined to the reports which have been based upon actual studies and to figures which reveal the incidence of various manifestations of undernutrition, a pattern of malnutrition emerges with reasonable consistency. The most up-to-date evidence on this subject comes from France, and little of this is based upon studies subsequent to the breaking of diplomatic relations between the United States and Vichy France in November, 1942. Reports from other countries in western Europe [1-7] suggest that the general picture is not fundamentally different in these countries, although local conditions have caused considerable variation in the incidence of the various manifestations of malnutrition. Specific deficiency diseases may have been encountered somewhat more frequently than in France, but there is no indication of the occurrence of any of these in epidemic form. The same may be true of certain areas in France where careful studies have not been made, for local food supplies have been less adequate in some districts than others, depending upon the self-sufficiency of the region and its particular transportation problems. However, a recent report of the League of Nations [7] states that reduction in food supply tends to fall most heavily on the non-farming population and more especially on the working population in the industrial centers. It states further that " farmers are living on a nutritional level which is not much lower than before the war." We may, therefore, review the studies which have been conducted principally in urban centers in unoccupied France and assume that they give a general and not too distorted picture of the seriousness of the nutritional situation and the characteristic problems presenting throughout the occupied countries of western Europe. No conclusions should be drawn as to the application of these studies to the situation in the eastern countries.

In order to simplify the presentation of a very complicated situation, we may speak of the diet of children in these urban areas in France as though it had remained substantially the same during the past three or four years. Actually in certain localities there have been temporary acute shortages of essential foods, restrictions have been tightened on certain rationed foods, and the availability of supplemental unrationed foods has varied from time to time. The total value of the diet this year has been unquestionably less adequate than in 1941 for most people, but the overall picture does not justify separate consideration by periods. In reviewing the physical state of children, we must take into account the deterioration which has been going on from year to year as a result of this continuing undernutrition. It is possible to obtain a fairly adequate picture of the state of children in 1941 because of the careful studies carried out during that period and already published. There is just enough material available from studies conducted during 1942 and the first half of 1943 to suggest the rate and extent of deterioration during this period. We may assume that these changes have continued in the same direction and at least at as great a rate since that time. Hence, we may form a picture of the present situation or the situation which will probably exist when extensive relief operations become possible.

I will deal principally with data from sources with which I am personally familiar, that is, from studies conducted first by the Institut de Récherches d'Hygiene, established in Marseilles early in 1941 with the assistance of the Rockefeller Foundation Health Commission, and secondly from studies conducted in unoccupied France for the American Red Cross late in 1942.

CALORIC INTAKE

As to the caloric value of the diets consumed by children in France, consideration of official rations is not very satisfactory because full rations frequently have not been obtainable and the supplemental sources of calories from unrationed foods has always been a considerable factor, though varying from time to time and between individuals. We must rely principally, therefore, upon the few careful dietary studies which have been made.

In 1941, Youmans [8] found the average caloric value of the diet of children in Marseilles to be about 22 per cent below estimated requirements for age. He found that the average intake for all ages was somewhat below 2,000 calories per day but approached that figure quite closely. He pointed out, however, that some individuals in his series obtained far less than this average amount. Kuhlman,[9] continuing these same studies, reported for late 1941 an average consumption among children of 1,600 calaries. These figures were somewhat higher than reports from other parts of France, but the studies in Marseilles were so thorough that I suspect that the other studies overlooked certain accessory sources of calories in many diets.

Kuhlman,[9] repeating the same studies in the spring of 1943, reported that children 6 to 13 years of age were consuming on the average 1,725 calories. The average age of these children was approximately 10 years, and this would make the average deficiency in their caloric intake about the same as reported by Youmans for early 1941. Later in this review I will consider the weight and gains in weight of these children, and it will be seen that these figures will suggest a deficiency in caloric intake of about the order indicated by these dietary studies. They do not suggest that reports of average values of 1,200 to 1,500 calories per day over long periods could be correct.

THE PROTEIN PICTURE

The total protein provided by the French diets during the last three years has been very close to the amount recommended so far as children are concerned. Youmans gave the figure of 63 gm., which is approximately the amount recommended for 10 year old children. However, only 19 gm. of this total were from animal sources, the other 44 gm. being made up of vegetable proteins of varying qualities. It is generally agreed that two-thirds of the protein consumed by children should come from animal sources, and, if this proportion is less, the total protein should be increased. The ratio of animal protein to vegetable protein in the French diet has unfortunately been reversed, and we may conclude that there has been a marked lack of high quality protein so essential for normal growth and replacement of tissues. The lack of adequate calories has probably resulted in the burning of much of the available protein for energy purposes and has made the lack of protein for structural purposes one of the major deficiencies in the French diet.

Turning to the physical examination and the laboratory tests for evidences as to the effects of this protein deficiency, one is surprised to find that edema was never encountered and that, when serum albumin determinations were made, hypoproteinemia was not encountered. In studying the growth and development of these children, ample evidence was found that they were a retarded and under par group, and it seems very probable that a continuing lack of suitable proteins over a period of years was responsible in part at least for their failure to make normal progress. The studies of the size and build and growth of these children will

be considered more fully in another connection.

MINERALS AND VITAMINS

Most of the minerals were found to be provided by the diets in France in adequate or near adequate amounts. Calcium has been somewhat below recommended values because of the lack of milk in the French diet, but this mineral has been secured to a more adequate degree than would have been expected from other sources. The value given by Youmans was 0.85 gm. per day. Roentgenograms failed to reveal calcium deficiency in more than a few of the older children, but rickets was commonly recognized in the films of infants as will be considered further in connection with vitamins.

All of the dietary studies suggest that iron has been present in adequate amounts in the diets of children throughout the past three or four years so that one would not expect to find anemia due to iron deficiency, but all of the studies have shown a considerable number of anemic children. In the spring of 1943 Kuhlman found 25 per cent of all red blood cell counts were under four million, but none had fallen below three million, and the average for the group was 4.34 million. In 15 per cent of the children the hemoglobin level was under 10 gm., and the average value for the group was 11.3 gm. These reports are not sufficiently detailed to be sure what type of anemia was present in these cases, but the chief deficiency seems to have been in the number of red cells. It is probable that in many of these cases there were other than dietary factors operative, but it may be that the prolonged inadequacy of suitable proteins was responsible in some instances.

The only striking and serious vitamin deficiency encountered in these studies was lack of vitamin D. In studying the x-ray films Kuhlman and I [10] found signs of early rickets in about 50 per cent of all those examined who were between 6 and 18 months of age. Many of these were recognizable on clinical examination. Deformities of healed rickets were often seen among the older children; deformities which must have originated prior to the war. It appears that the use of accessory sources of vitamin D in the feeding of infants had never become a generally accepted custom as a preventive measure in Marseilles and in many parts of France. Although sources of vitamin D had become more difficult to obtain as a result of the war, the finding of a high incidence of rickets among infants cannot be considered entirely an effect of war. Cases of florid rickets were frequently seen in the hospitals of Marseilles, but I could not find evidence that there had been any particular increase. The climate of Marseilles was fortunately such as to prevent most of the cases becoming advanced, and the physicians took it for granted that this climatic factor was sufficient to avoid vitamin D deficiency being of great health importance. However, the high incidence of early rickets in a random sample of the infant population would seem to discredit this view. Unfortunately, phosphatase determinations were not made in connection with these studies, so that it is not possible to say how much rachitic activity existed among the older children, but it is probable that lack of this vitamin had some adverse effect upon the health and growth of many of the older children.

Vitamin A was very markedly lacking in the French diet because of the lack of butter fat and the lack of reenforcement of butter substitutes. The average consumption of vitamin A as such was found to be about 100 I.U., but large quantities of carotene were taken in the diet, the figure given by

Youmans being 46,000 I.U. Clinical examinations occasionally revealed mild or suspected signs of deficiency of vitamin A, but no clear-cut active cases were recognized among children. The adaptometer test revealed a small percentage with poor visual acuity in the dark, but the blood vitamin A levels were deficient in 69 per cent of cases. The significance of these divergent findings is not clear, but one may conclude that, although clinical deficiencies were very infrequent and mild, some malnutrition may have resulted from lack of true vitamin A.

No laboratory tests for deficiency of vitamins of the B complex were made in the Marseilles studies. The dietary studies indicated that the provision of thiamin was adequate; of niacin, moderately deficient; and of riboflavin, probably markedly insufficient. No clear-cut clinical evidences of thiamin deficiency were found on examination. A number of cases showed suggestive evidence of riboflavin deficiency, both in the skin and in the conjunctivae.

Although citrus fruits were not obtainable during most of the past three years, the dietary histories suggested that the ascorbic acid intake was made adequate by large provisions from other sources such as potatoes. No clinical or x-ray evidences of deficiency of this vitamin were noted in any case. Youmans reported that in 1941 the blood level was found unsatisfactory in 57 per cent of the children studied, but no determinations of the level in the white cells were made. In the cases studied for the American Red Cross in 1942, no clinical or x-ray signs were encountered, but I have not seen the results of the blood studies made at that time.

PHYSICAL STATUS AND EVIDENCE OF LACK OF GROWTH AND DEVELOPMENT

I had the opportunity of carrying out studies of the growth and development of children in France, both at the Institute in Marseilles and in connection with the American Red Cross program. Several reports of these studies have already appeared.[10-12] The differences between the children of Marseilles and American children as revealed by measurements as well as by patterns of osseous development in roentgenograms were reported in detail in 1941.[10]

It has been indicated that the physical examinations of children in Marseilles revealed few and inconclusive signs of specific deficiency diseases other than rickets among infants and anemia in older children. Few children appeared emaciated or grossly lacking in subcutaneous tissues. Casual observation, however, showed that many of these children were under par, appearing listless and fatigued, having poor posture and small flabby relaxed muscles, and seeming generally to be poorly developed. The most striking feature of their measurements when compared with those of American children was their very short stature for age. They were also slightly narrower in chest and pelvis and their skeletal muscles were often poorly developed. They tended to lack subcutaneous tissue and hence to be underweight, but the average weight for age and height was surprisingly little below the standards of Baldwin and Wood. The osseous age of these children, as judged by the standards of Todd was usually somewhat retarded. In a study of the x-rays taken in the spring of 1941, I found that the retardation in this respect averaged 8.6 months for boys and 4.7 months for girls.

The x-rays and measurements of the children in Marseilles who were examined during November and December of 1942 in connection with the American Red Cross program were sent to me by Kuhlman, and I was able to study them while in detention at Lourdes, France. The findings have

recently been published.[12] The children in this group were all between 10½ and 11½ years of age. It was impossible to discover in the measurements any clear evidence that these children were less well developed than those observed a year and a half previously. The osseous age of these 11 year children corresponded most closely to the standards of Todd for 9½ to 10 years of age.

The reports of studies in Lyons, Clermont-Ferrand, Montpellier, and Monaco made along similar lines for the American Red Cross, were not available before I was taken to Germany, and I have been unable to secure information about them. However, while planning these studies in 1942, I spent much time in conferences with pediatricians in these centers and examined a few children. It appeared that the state of nutrition was much the same in all these cities. I concluded at that time "that a state of general moderate to marked undernutrition was widespread in unoccupied France in the fall of 1942, at least among children over 10 years of age. There was little evidence that this undernutrition had generally reached a stage in which health had been profoundly affected, life endangered, or development more than moderately retarded."

Among the children studied by Kuhlmann in Marseilles in the spring of 1943, only 18 per cent of 233 of school age were more than 10 per cent underweight for height and age, according to the Baldwin-Wood standards. Of 83 children examined in the spring of 1942, and again a year later, only two had lost weight during this period, and 50 per cent had gained a normal amount for age. The average gain of the other 48 per cent had been approximately 65 per cent of expectancy.

Kuhlmann concluded that the situation in 1943 did not show decided aggravation over that found in 1941 and 1942 and that the disturbances observed were doubtless not irremediable, but that the continuance of the unsatisfactory state of affairs described might lead to serious consequences. The surprising fact is that after three years of continuous underfeeding 50 per cent of these children failed to show recognizable signs of malnutrition.

The objection may be raised to the implications of these studies that they have dealt with relatively small numbers chosen at random and that the finding of only two or three children in any such group who were severely malnourished would indicate that there were many such in the total population. This is an important point to remember in all plans for relief, for centers fitted to give intensive rehabilitation care to small numbers of children unquestionably are needed in all large cities in France.

In October, 1942, I had the opportunity of observing the work of the Swiss Red Cross in Geneva, and saw a trainload of 1,000 French children arrive from Paris and the channel ports for a three months' period of rehabilitation in the homes of Swiss families. These children had been carefully picked by French physicians as being the most urgently in need of this care in their communities. Some of these were obviously in wretched physical condition, but many would have required a rather careful examination to be certain that they were suffering from malnutrition.

Reports have just been received from the feeding center maintained by the American Friends Service Committee in Toulouse, dated February, March, and May, 1944, which deal with 218 children selected by the school physicians of that city on the basis of greatest need. I have had the opportunity of studying them through the courtesy of the Committee's head-

quarters in Philadelphia. The medical examination of these children showed two-thirds to be much below normal weight, a few in a cachectic state, and all underweight. One-half were said to show some evidence of decalcification of bones, one-third feeble muscular development, and 5 per cent were anemic. These are findings which one might expect at the extreme of the distribution in any large series in which the general situation is as I have pictured it for the child population of Marseilles.

MORBIDITY AND MORTALITY RATES

The data available on morbidity and mortality rates is too scant or unreliable to justify an attempt to analyze them, but here again the reports of widespread disease and death do not inspire confidence. The writer as late as November, 1942, interviewed many physicians and public health officers in then unoccupied France and was told of increased local mortality rates, especially for diarrhea in infancy and tuberculosis. The total infant mortality rate was said to have risen for the country as a whole during the two preceding years, but no figures were available. It may be presumed that further increases have taken place, but a report written at the beginning of this year (1944) by a physician who has continued to study nutrition in southern France does not suggest that any startling changes have taken place.

POWERS OF ADAPTATION

The surprise with which we review the evidence as to the nutritional state of children in France, in view of the known long continued deficiencies in diet, is probably due to our failure to appreciate the range of the powers of adaptation possessed by human beings. We recognize the remarkable capacity of individuals to adapt to unfavorable climatic and other environmental conditions, but fail to consider the possibility that similar adjustments can be made to gradual and not too excessive deprivations of food.

An article by Mitchell which has just appeared in the *Journal of the American Dietetic Association*[13] is most timely and impressive from this point of view. Mitchell reviews a number of studies which show the variety and extent of adaptations which can be made by animals and man, but the most pertinent to our problem is an experiment conducted by Benedict and his collaborators in 1917.[14] College students were kept on diets of normal composition but 1,400 calories a day until they lost 12 per cent of their body weight, a period requiring 3 to 10 weeks. The food intake was then raised to an amount sufficient to maintain this lowered body weight at a constant level for the remainder of the experimental period of 4 months. This weight was maintained on the average with a diet of 1,950 calories, even though these students had consumed between 3,200 and 3,600 calories prior to the experiment. These men continued normal activities throughout and the mild deleterious effects which were noted occurred almost entirely during the early weeks of adaptation and disappeared after the 1,950 calorie diet had become established. It is of interest that the average basal metabolic rate of this group was lowered 18 per cent by this dietary change and the energy required to move 1 kg. of body weight one horizontal meter had decreased 12 per cent. Mitchell concludes that nutritional requirements are probably flexible to a degree, depending upon the food available, and that as a result "the detrimental effects of undernutrition are alleviated or quite possibly may be resolved entirely if the extent of undernutrition is not extreme." This is accomplished, according to Mitchell, either by a more

economical use of what little is available or by lowering of requirements, until an equilibrium has been established on the limited food supply. Put in the phraseology of Le Châtelier's law, Mitchell states, "If an animal in equilibrium with its food supply is subjected to nutritional stress such as an inadequate supply of one or more of the essential nutrients, the animal will react in such a way as to minimize as far as possible or to undo entirely the effects of the nutritional stress."

Among the children studied in Marseilles, by no means all of those who had been receiving the most inadequate diets were among those recognized to be malnourished. In spite of almost universally poor diets from our point of view, nearly 50 per cent of the children studied as late as the spring of 1943 in Marseilles failed to reveal recognizable signs of malnutrition. It may well be that this half of the children had more effective powers of adaptation than the others and that individuals differ a good deal in this capacity. At least it seems probable that part of the surprisingly good showing made by the children in France, after such prolonged undernutrition, may be attributed to these little recognized capacities for adaptation.

CONCLUSION

It seems safe to conclude that the growth of French children has been moderately retarded in a very considerable proportion, probably half of those of school age. At least this proportion have shown some signs of general malnutrition, chronic fatigue, or lack of physical fitness. Osseous development has probably been moderately retarded. Their short stature must be attributed in the main to intrinsic causes or to faults in diet antedating the war. The failure to grow normally, in so far as due to nutrition at all, would seem to be related to one or a combination of three factors—inadequate calories, inadequate amounts of animal protein, and lack of vitamin D. The effects of inadequate calories may be produced in part indirectly by interfering with normal activity which results in poor muscle growth and strength, leading to chronic fatigue and still less activity. The diets actually consumed have proved to be sufficient for the great majority of children to prevent disease or progressive physical deterioration under the existing conditions.

Those interested in the rehabilitation of France, while being thankful that their worst fears have undoubtedly not been justified, should plan on the premise that prolonged moderate undernutrition has had real and important effects upon the health, physical fitness, and growth of children in that country and that a liberal and well rounded diet [15] will be needed for a long period to come if full recovery in health, in growth, and in development are to be accomplished. It is especially important to remember also that the adverse effects of war upon the children of Europe have not been confined to undernutrition, and that full rehabilitation will require attention to many aspects of physical and mental hygiene. Crowding and unsanitary living conditions, lack of adequate public health control of communicable diseases and medical care of the sick have probably had at least as much to do with any increases in mortality rates as have deficiencies in diet.[16–18]

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Release of Penicillin for Civilian Use

The War Production Board, Washington, announced in March that steps had been taken to make penicillin available to all hospitals and physicians through normal drug trade channels beginning March 15. It will be supplied in vials containing 100,000 units of sodium penicillin for human parenteral medication. Approximately 1,500,000 vials of this size will be made available for distribution in each month.

At present the drug has been distributed through 2,700 hospitals under restrictions that have required about 400,000 vials per month, so that the new amount is nearly four times that recently available. This action is said not to affect the export of the drug which has been approved for certain foreign areas where distribution controls comparable to those in the United States are in effect. Applications for the drug hereafter should go through normal drug supply channels rather than through the Civilian Penicillin Distribution Unit established in Chicago in May, 1944.

Health Services for Migrant Farm Families*

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MIGRATION has been part of the pattern of American life throughout the history of this country. As the frontiers were pushed westward, people over and over again moved their families and their possessions to new areas in which they settled and developed their economic and community life. This movement, that of the pioneers, was a migration which had as its stimulus the increased opportunities occasioned by development of a rich and fertile country—opportunities which were constantly present so long as the frontiers remained.

The migration of peoples in the United States has not ceased, but in the later development of our economic life it has changed markedly in character. This paper is concerned with one broad aspect of the general problem of migration in recent years—the problem of migratory agricultural people. The clear-cut trend toward the development of large land holdings, the increasing use of farm machinery, and the impoverishment of agricultural people in many sections of the country, due to depletion and erosion of the soil, have served to create an unrooted, shifting population of dispossessed farm people who move through the cycle of farm ownership to tenancy, to share-cropping, and finally to agricultural labor.

The nation was little aware of the vast problem which was developing throughout the land, and which by the 1930's had assumed relatively vast proportions. Though in urban centers large masses of unemployed and impoverished people are easily discerned because of their concentration, an equal number of such people, where highly mobile and scattered over sparsely settled rural areas, are not readily apparent to the unpractised eye. The movement of such peoples from one area of employment to another throughout the greater part of the year, their concentration in miserable shelters on the outskirts of towns, and their long hours of work in the field during the day tend to keep them out of sight and to make the problem of their existence much less apparent to the average busy citizen.

The Grapes of Wrath, through its penetrating study of the Joad family, served to dramatize the problems of migratory farm workers so vitally that the reading public was rudely shocked. Studies by the Tolan and La Follette Committees and Carey McWilliams' factual book *Factories in the Field* backed up with hard facts and cold figures the fictional version set forth by John Steinbeck.

Here were people presenting problems of housing, nutrition, and medical services—approximately two million of them—lacking the barest necessities we feel essential to a decent existence in

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our social structure. Today the extensive program of public health and medical care that is being carried on by the Office of Labor of the War Food Administration, as a wartime agricultural man power measure, represents an outgrowth of the work started by the Farm Security Administration in the 1930's to meet these problems of migratory farm families.

Late in 1935, a camp for migratory farm families was opened in Arvin, Calif., by the Federal Emergency Relief Administration. This camp was transferred early in 1936 to the Farm Security Administration which, at about the same time, constructed and opened the camp at Marysville, Calif. These camps were the forerunners of a growing number of federal camps for farm workers, which have come to number about 250. The earliest camps, those developed first in California and Arizona, then in the Pacific Northwest, and later in Texas and Florida, could of course care for only a small minority of migratory farm families in those areas, but they were vastly important in developing patterns by which the problems of migrants could be attacked. Some of the camps were of permanent construction, whereas others were "mobile," suited to the needs of seasonal workers following the crops. They were constructed to provide minimum decent housing, good sanitation, and community and recreational services. The families were encouraged to take part in the administration and maintenance of the camps by participating in elected camp councils, working in coöperation with the camp manager and his staff.

It must be remembered that in a majority of instances these people were ineligible for local relief and medical services because their mobility made them, for the most part, nonresidents under the various residency laws of the states. Time does not permit a discussion of the numerous problems of ill health among these migrants which were not being met even to the smallest degree. Serious illness and malnutrition among them were increasingly reported. The fear of serious epidemics was ever present. Public health authorities were turning increasing attention to the problem, but the desperate need for medical and dental services remained.

A plan to administer federal aid in coöperation with the California State Relief Administration was soon superseded when it was decided that relief furnished to transients by the Farm Security Administration through its facilities should include medical care. Prepayment plans such as those sponsored by the Farm Security Administration among low-income farm families were not adaptable to meet the needs of migrants, for there was not only a constantly shifting population to deal with, but one unable to purchase medical care through its own resources even on the prepayment basis. Payment for medical care for these migrants through use of individual grants, moreover, was not workable, because of the high mobility of the families. Accordingly, an interesting mechanism was set up in coöperation with the State Health Department, the State Relief Administration, and the State Medical and Dental Associations. A corporation was organized known as the Agricultural Workers Health and Medical Association, a nonprofit association financed by grants of funds from the Farm Security Administration. The association could engage in any activities related to the provision of medical and dental services, nursing, and hospitalization. As camps were established in other regions, similar medical care corporations were organized to provide services for medically indigent migratory farm families.

During these pre-war years, regional health programs were directed by Farm

Security Administration medical officers who, with their staffs, supervised general health and sanitation work in their regions and served also as medical advisers to the agricultural workers' health associations. Each association, operating through a board of directors including representatives of professional societies, public health agencies, and general public and agricultural interests, contracted with local practitioners and institutions to render needed services to farm workers and their families.

Services were rendered chiefly through health centers or clinics set up in government farm labor camps and at other points of farm labor concentration, in the charge, usually, of a full-time nurse. Local health departments coöperated in holding various public health clinics and conferences in these health centers. Therapeutic services were rendered by local private physicians or dentists at appointed clinic hours, or, when serious complaints were presented between clinic hours, by referrals to their private offices. Hospitalization was of course provided when necessary, and services even extended to the provision of special diets in cases of malnutrition.

This, then, was the general pattern which had been developed when the war came in 1941. The war was to bring very drastic changes in the national farm labor picture, but the general pattern for providing health services was to prove its worth under new conditions. As large numbers of agricultural workers migrated to the cities in search of more lucrative work in war industries, it became quickly apparent that there would be a shortage of agricultural labor. In 1942 the production of food seemed seriously menaced by the shortage of workers. Emergency funds available to the President were used to bring several thousand Mexican farm workers into the United States and to transport some of our own workers to points of acute labor shortage.

In the spring of 1943 an act was passed by the Congress setting up an extensive program for the importation of farm workers from other countries, chiefly Mexico and the West Indies, and the mobilization of available farm labor within the United States. Under the international agreements and in accordance with the act adopted by the Congress, the workers imported and transported under this program have been entitled to receive medical care and health services without cost to themselves. Under the Office of Labor of the War Food Administration, the pattern for providing health services which had originally been developed by the Farm Security Administration has been maintained and expanded to meet the needs of all farm workers under War Food Administration jurisdiction.

During this past year the health program has been carried out largely through six agricultural workers' health associations which cover from four to twelve states each. Each operates under a contract with the War Food Administration, whereby the association is paid by the federal government for the services it renders foreign and migratory workers. The associations represent practical coöperation between government and organized professional groups, and they have encountered little difficulty in enlisting the support of local physicians, dentists, and hospitals. The flexible association mechanism lends itself to fast action in a rapidly moving program built around a highly mobile population. Informal agreements can be reached with local doctors and dentists on short notice; nurses can be employed on the spot; drugs and supplies can be purchased in the open market; and bills can be paid the day they are received.

As in pre-war times, the program has been carried out wherever possible

through clinics in the farm labor supply centers or at other points of farm labor concentration. Approximately 250 clinics are operated during the year, staffed by full-time or part-time nurses. Therapeutic services are provided by one or more local physicians serving at regular clinic hours each week and paid on a per hour basis. Arrangements are made for dental care either on a clinic basis or by referral to the offices of local dentists. A large volume of hospital care is provided, not only for acute conditions but for the correction or amelioration of chronic and disabling conditions affecting health and working efficiency. In two critical areas—in Florida and Arizona—special hospitals have been maintained for farm workers.

At certain points with critical shortages of physicians and dentists, commissioned officers of the U. S. Public Health Service have been used to furnish care. Aside from six medical and dental officers now actively serving in Connecticut, Florida, Idaho, and Washington, there are several full-time dentists engaged by agricultural workers' health associations to operate mobile dental clinics—a highly useful way to bring dental care to a maximum number of those needing it.

With regard to the highly important field of preventive services, the cooperation of state and local health departments is constantly enlisted. The policy is to utilize local health department facilities when they are accessible to the farm workers, or to invite local health department personnel to conduct clinics or health education programs in the facilities of the farm labor camps. Probably the chief province of coöperation this year has been in the control of venereal diseases. Even in this well established public health activity, however, local public health services are often lacking, and it is necessary for the clinic physician, engaged primarily for general therapeutic medical services, to conduct regular venereal disease clinics. Unfortunately in those very areas in which farm labor concentration runs high, local public health services are generally rather weak, so that the responsibility for preventive services falls chiefly on the personnel in this program.

The initial preventive measure, however, consists of recruitment medical examinations before workers are transported by the federal government. The task is not only to prevent the spread of communicable diseases across state or national boundaries, but also to assure the transportation of workers who will be physically capable of doing strenuous farm work.

In Mexico, for example, every worker is examined by a team of U. S. Public Health Service medical officers, who work in coöperation with Mexican physicians. In addition to a physical examination, an x-ray of the chest is performed and each worker is vaccinated against smallpox. Immunization for Rocky Mountain spotted fever is started in Mexico City and completed on the trains carrying workers to regions where this disease is prevalent. Certain of the defects found in these workers are correctible, and the worker is allowed to come through to this country after the defect is corrected. A laboratory for performing serologic tests for syphilis is being set up in Mexico City. Similar examinations have been done for Jamaicans, Bahamians, Barbadians, and Newfoundlanders. Somewhat less extensive recruitment examinations have been done for interstate migratory workers.

Once farm workers are placed in an area of employment, every effort is made to provide a complete program of preventive services. These have included mass immunizations, chest x-ray surveys for tuberculosis, lectures and discussions on health and personal hygiene, maternal and infant hygiene

clinics, planned nutrition, venereal disease control, environmental sanitation, and safety education and practice. In many places, isolation centers are maintained for cases of communicable disease. Food handlers are routinely inspected, and laboratory tests are performed to eliminate the possibility of food-borne epidemics. The problems of sanitation, particularly in the mobile camps, are tremendous, and constant vigilance is necessary to maintain sanitary facilities in a proper condition.

The predominance, since the onset of the war, of single male workers rather than families has lessened the need, to some degree, for maternal and infant services. Where families are still part of the seasonal farm labor population, however, as they are particularly in parts of Florida, Texas, and the Pacific Coast, well baby conferences are carried on, attended by local physicians, and complete prenatal and postpartum care is rendered. Regular clinics are held also for preschool children, and in a few places where nursery schools are operated, daily health inspections are part of the routine, and health education is an integral part of the school program. For teen-age girls, classes have been conducted in sex hygiene, developing their approach from matters of special interest to young women, such as cosmetic care of the skin.

Some of the camps maintain completely equipped delivery rooms where deliveries can be performed practically under hospital conditions. Where hospitals are locally available, however, maternity cases are usually hospitalized. The usual mother in a farm labor family has had experience with neither a hospital nor a physician during her previous pregnancies, and special problems are presented with respect to overcoming fears and superstitions which have been developed through experience with untrained midwives.

In all these activities, in both the therapeutic and the preventive aspects of the program, the field nurse is a key worker. With the coöperation of the manager in the farm labor camp in which she is stationed, clinics are organized and the workers are educated to use them at the first sign of illness. The task of establishing clinic hours convenient to the workers, in order to conserve their time and productive capacity, and at the same time convenient to the local physician, is often difficult. The nurse's intimate contact with the camp enables her to promote health education, to inspect sanitation and report needed improvements, and to act as a confidante to the workers whose distance from home often causes mild depressions or anxiety attacks. The nurse is furnished with a liberal set of standing orders, issued by the field medical officer and approved by the local clinic physician, to enable her to deal with minor ailments pending the attendance of the physician. Finally, the nurse is a natural liaison officer between the local health agencies, the local physicians, and the farm worker population.

This program costs the federal government about two million dollars annually, or from about $1.50 to $2.00 per eligible person per month. Costs vary markedly in different parts of the country and in accordance with the pattern of services. Thus, services rendered on a clinic basis with remuneration at a fixed rate per hour tend to be more economical than services rendered by referral to private offices, with payment being made on the basis of a fee-for-service schedule.

In the course of a year, over 150,000 farm workers and their dependents are involved in this program. Services may be provided only to certain specified categories of farm workers defined in the legislation passed by the Congress. The chief groups covered are farm

workers imported from foreign nations, inter-state transportees, and other migratory farm workers living in areas surrounding government farm labor supply centers to whom adequate medical services are not otherwise available. Our agency is proud of the fact that sickness absenteeism has, according to our records, been kept down to a loss of only 1.5 per cent of available man days, a rate which compares most favorably with the general industrial average throughout the country.

The end of the war will undoubtedly again change the farm labor situation. Importation of foreign workers will certainly be curtailed. Shut-down of war industries will release many families for migration back to the fields—in fact, evidences of this are already seen in California and the Pacific Northwest. Labor surpluses, if they exist, will once again mean the mass migration of agricultural workers from area to area. Increased use of farm machinery will bring with it a corresponding increase in the number of unemployed in agricultural labor.

We cannot and must not permit another "Grapes of Wrath." We must recognize that while we have agricultural migrants we face certain familiar problems. Migrants are people. They deserve a chance to live in decent housing, to feed and educate their children, to get needed health care for their families. A beginning has been made in the patterns developed in recent years, patterns of federal action supplementing services provided by the states. The lessons of experience must be translated into a really effective long-range program of health and welfare for our migrant farm families.

Summary of Discussion

Dr. John J. Sippy emphasized the great problems created for California because of the migration of labor into that state. He stated, however, that with more prosperous economic circumstances today, he believed that the migrants could afford to pay for their own medical services on a private basis and that there was, therefore, less need for federal subsidy to a medical care program. He stressed the importance of local health department responsibility in handling the problem of health services to migrant workers. Dr. Sippy pointed out that in San Joaquin County, where he was Health Officer, only a small portion of the total migrant population was located in federally operated camps, leaving a great majority housed on the premises of private growers.

Dr. Jessie M. Bierman pointed out that residence requirements for welfare department assistance ruled out aid to the migrant families. She stressed, however, that with regard to the preventive services rendered by health departments the same aid should be given as for local citizens. Dr. Bierman discussed the serious extent of the health needs of this group.

Dr. Myron E. Wegman raised the general question of the proper rôle of the health department in this entire program. Dr. Mott replied that the burden of care for this group should be shared by the states and the federal government, but he raised the further question on the proper proportions which should be assumed between the federal and state agencies. He pointed out that the cost for complete medical services to this group was relatively high, amounting to as much as $3.00 per person per month in the Pacific Coast states. The question was: Could this expenditure be borne by the states or local communities without federal assistance? Dr. Sippy reaffirmed his belief that the operation and financial support for this program should be entirely on a local basis. He claimed that the seriousness of the problem had been exaggerated by such books as *Grapes of Wrath*.

Katherine Baker stated that the problem of health services to migrant families was even greater than had been written about. She pointed out that little in the way of proper housing and sanitation on the premises of private farms could be expected when the owners of those farms, responsible for their maintenance, often lived thousands of miles away.

Question from the floor: Are any legal

difficulties encountered in organizing the non-profit organizations which provide health services to the migrants?

Dr. Mott answered that no insurmountable difficulties had been encountered.

Question: Do health departments play any part in the management of these corporations?

Dr. Mott answered that in California and elsewhere there were representatives of the health departments and the U. S. Public Health Service on the Boards of Directors of the corporations.

Question: Are medical records transferred from camp to camp when the migrants move?

Mrs. Baker answered by pointing out the numerous difficulties involved in the rapid transfer of records, indicating that this was a problem still to be solved adequately.

Question: Are health services rendered to day-haul children?

Dr. Bierman answered that no special health services were provided this group in California, and it was explained that they were not under the jurisdiction of the War Food Administration Office of Labor.

Question: Are health services provided by agricultural workers' health associations in agricultural youth camps?

Dr. Mott answered that he did not know of any, except possibly in Maine, pointing out that these camps were not under WFA Office of Labor jurisdiction.

Question: Is bedside nursing provided to the migrant families?

Mrs. Baker answered that as much bedside nursing was provided as there was time for.

Question: Are any school nursing services provided in this program?

Mrs. Baker answered that the children of migrant families received school nursing services through the regular school nurses in the local communities in which they might attend school. Nursing services are, however, provided in a few nursery schools operated under this program.

Professor Winslow Retires from Yale

Recent announcement has been made of the retirement of Professor C.-E. A. Winslow as Professor of Public Health at Yale University at the close of the current academic year, and of the appointment as his successor of Professor Ira V. Hiscock, now in active service in the Civil Affairs Division of the War Department. Professor Winslow has taught at Yale for thirty years. It is indicated that Yale University has decided to carry the work of his department forward along the same broad lines which he has laid out. For the A.P.H.A. this is largely a family affair, since Professor Winslow is a Past President of the Association, Past Chairman of the Committee on Administrative Practice, recipient of the Sedgwick Memorial Medal, and is at present editor of the *American Journal of Public Health* and chairman of the Committee on the Hygiene of Housing. Professor Hiscock has been fruitfully active in the work of the Committee on Administrative Practice and in the Health Education Section, and as the moving spirit of the Health Education Institutes. He is now a member of the Editorial Board of the *Journal*.

War and the Birth Rate— A Brief Historical Summary*

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WAR, as might be expected, affects the course of the birth rate. But the extent of the change from the normal pattern varies widely. Our opinions on this matter are affected to a great extent by what has happened in the two World Wars of the present century. However, there is little ground for believing that these recent experiences are typical of what has happened generally in wartime: indeed, even in these two great conflicts there are remarkable differences as between the various belligerents.

We have comparatively little factual knowledge regarding the extent to which most wars of history have affected the birth rate because the compilation of birth statistics as well as of vital statistics generally is only a relatively recent development. We may conjecture that during some of the great wars of conquest, such as the wars of Alexander and those of the Crusades, in which large numbers of men were involved, the birth rate in the communities from which the men were drawn may indeed have fallen sharply. On the other hand, the wars which involved mass movements of whole populations, such as those which brought the hordes of central Asia into Europe, may have had little effect on the birth rate of the conquering peoples. In the wars of western Europe from the 15th to the 18th centuries, the birth rate could not have been affected appreciably because armies were comparatively small and very frequently consisted of mercenaries. A probable exception is the Thirty Years' War, when parts of Germany were overrun again and again, and the population was decimated. Possibly another significant exception is Sweden when she was at her height of power. Since she was a comparatively small nation, a sizable proportion of her ablebodied men was probably absent from the country on military service. Most of the wars of the 19th century also involved comparatively small bodies of troops. This was particularly the case with England which engaged in many wars during this time; her small armies usually consisted of professional soldiers and troops drawn from the colonies.

Our earliest concrete evidence of the effect of war upon the birth rate is provided by the records for France early in the 19th century. These data are of particular interest since they cover part of the Napoleonic wars, for which large armies were first organized on the basis of national levies. For most of the period from 1801 to 1811, the

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recorded births showed little variation from year to year, the range from the high to low during this period being only 5 per cent. There was, however, a decrease of 5 per cent in the single year from 1811 to 1812; this may perhaps be associated with the Napoleonic invasion of Russia. In 1814, there was a sharp increase in births, and for a short period the figures remained at a constant level. The war with Prussia in 1870 caused a moderate, but very temporary reduction in the birth rate, from 25.5 per 1,000 in 1870 to 22.9 in 1871, but there was an immediate recovery. Figures for Germany for those years also showed a drop, from 38.7 in 1870 to 34.5 in 1871; as in France, there was an immediate recovery after the war above the pre-war level.

In our own country, the Civil War provides the first opportunity to observe the effect of war upon the birth rate. Unfortunately, birth records on a national scale for that time are not available. Looking through the records for Massachusetts, it is found that the birth rate fell from a level of 29 per 1,000 in 1860 and 1861 to 25.9 in 1862; the decline continued throughout the war and immedately thereafter, reaching a low point of 23.2 in 1866. There was a sharp recovery to 26.2 per 1,000 in 1867.

The conflicts around the turn of the century, such as the Spanish-American War, the Boer War, and the Italo-Turkish conflict had little apparent effect upon the birth rates of the countries involved. On the other hand, the birth rate in at least one of the Balkan countries, Bulgaria, showed a marked decline during the series of conflicts that occurred there just before the outbreak of the first World War.

The World War of 1914–1918 is the first for which there is well documented evidence of the adverse effect of war upon the birth rate. For the war period as a whole, including 1919, the birth rates were less than 60 per cent of the pre-war normal in Hungary; about 60 per cent in France, Germany, Belgium, and Bulgaria, and about 65 per cent in Italy and Austria. In England, the effect of the war upon the birth rate was not only much smaller but was relatively long delayed. There, the wartime average was as much as 80 per cent of that in the immediate pre-war period. It will be recalled that the English Army was recruited on a voluntary basis until 1916 and that even then her new troops had to undergo a period of training at home. Consequently, the decrease in that country was not severe until 1917. The birth rate for the United States was affected only slightly, partly because of the short period of our participation and partly because of the spurt in the marriage rate in anticipation of the draft for military service.

The population losses resulting from the first World War were recently summarized by Notestein and his associates in their notable book, *The Future Population of Europe and the Soviet Union.* For Europe exclusive of Russia, the total population losses due to the war, including civilian deaths in excess of normal, were estimated at 22,400,000. Birth deficits accounted for 12,600,000 of this total, or about double the military losses. To Soviet Russia alone the war and the revolution brought a deficit of nearly 10,000,000 births. In several countries the curtailment of births during the war period corresponded to the total number of births of two whole normal years.

It is of interest to note the trend of birth rates in the neutral countries during this period. In Holland and the Scandinavian countries birth rates were hardly affected, showing generally a continuation of the long-term downward trends. The Swiss birth rate, however, declined rather sharply.

Hardly less important than the immediate effects of the first World War

on birth rates were the longer-term effects. It is true that there was a post-war resurgence in birth rates in all the belligerent countries after the war. But this rise was related to the high marriage rates after demobilization and was purely temporary. Even so, the maximum birth rates in the immediate post-war years were usually below the pre-war average and in practically all countries the long-term downward trend already in evidence before the war was resumed. A considerable part of this later decline reflects the reduction in the number of potential fathers —the young men who were killed during the war or who were so badly maimed that they did not marry. Nearly three-fourths of the German soldiers killed during the war and well over half of the French losses were men under 30. Altogether, about one-fifth of all the men between 20 and 30 in the two countries were killed during the conflict. Thompson, using the 1927 birth rate as a basis, estimated, for Germany alone, the post-war deficit of births arising from deaths of young men during the war at 2½ million, a figure roughly of the same order as the birth deficit during the war itself. Fortunately, our own losses during our short period of active participation constituted only a small proportion of our men of marriageable age.

The two decades between the great global conflicts have also witnessed bitter struggles. In this period, Japan began her cruel war against the Chinese, which has gone on for so many years now. No records exist which show how the birth rate of China has been affected. It is estimated that perhaps as many as 40,000,000 persons were forced to flee to inner China. In such circumstances, with many families broken in the course of their wanderings, the birth rate was bound to fall from the high level that is normal for the country. Japan's birth rate likewise has fallen appreciably, although probably not as fast as China's.

The bitter civil conflict in Spain brought a sharp reduction in the birth rate in that country. While the statistics are probably incomplete, they show a birth rate of only 16.2 in 1939, as compared with 24.1 in 1936.

This brings us to World War II. At the outbreak of this global conflict, France and Germany were more conscious of their population problems than most other countries of the world. In France, the long standing problem of depopulation gave rise, among other things, to a system of family allowances with the hope that this would have a beneficial effect upon the birth rate. Germany's program stemmed almost wholly from the accession of the Nazis to power. Her steps to increase the birth rate were much more positive than those of France and apparently produced better results. A large part of Germany's pre-war gains, however, may have resulted from the rise in employment due to her rearmament program, and from stern measures against abortion. Strongly mindful of her population policy, Germany, in opening the war, continued these pre-war measures with practically no modifications, and in addition gave suitably spaced furloughs for married soldiers in order to prevent a decline in her birth rate. Other less conventional methods were also encouraged with this end in view. An account in "Population Index" of October, 1942, based upon a study of monthly birth rates for Germany early in the war showed that until after April, 1940, the rates for that country showed little adverse effect. The peak which fell in April, 1940, was associated with the high marriage rates prevailing during the early summer months of 1939. On the other hand, the sizable decrease in the birth rate in May and June of 1940 was associated with the mobilization of the

armed forces in the preceding August and September. Subsequent variations in the birth rate from month to month were traced to the large scale furloughs granted following the conquest of Poland, to the recall of troops for the offensive in western Europe during the spring of 1940, and to the period of relative freedom from hostilities in the summer following.

We can then understand why the birth rate of Germany did not recede much in 1940. Indeed, the rate for the year was actually somewhat above the immediate pre-war level. The subsequent exigencies of war have, however, outweighed any illusions that the German authorities may have entertained regarding the maintenance of the birth rate at a high level. From a figure 20 per 1,000 in 1940, the rate slumped to 14.9 in 1942, the latest year for which a figure is available. Thus, within two years, Germany's birth rate fell by 25 per cent. Figures for the large German cities for the first half of 1943 show a further decline and in all probability this has continued uninterruptedly.

The record of many of the countries overrun by Germany is very disheartening. In the case of France, it is evident that as a deliberate measure of keeping her population down, Germany has kept captive for more than four years about two million prisoners of war, most of them young men who are in the prime of reproductive life. France's birth rate had already been lower than her death rate since 1935. In 1938, the birth rate for France was only 14.7 per 1,000. This was reduced to 13 in 1941, France's minimum for the present war, a figure which may be compared with a low of 9.5 in World War I. In 1942, on the other hand, the birth rate in France rose to 14.3, with a further rise to 16 in 1943; the figure is practically back at the level of the birth rate a decade ago. The experience of Belgium has been even worse than for France. In Denmark and Holland, the birth rates, strange to say, have increased during the war, and in the former country, the 1943 rate was the highest in about fifteen years. Although there are no data regarding the other countries once occupied by Germany, a sharp reduction in birth rates has, undoubtedly, been suffered by Poland, Yugoslavia, and Greece.

Finland's birth rates have shown rather wide fluctuations during the war, apparently reflecting the changes in the military situation for that country. Italy, now our co-belligerent, showed a drop of about 14 per cent in her birth rate from 1940 to 1942. With war being waged on her territory since 1943, the birth rate there is undoubtedly falling sharply.

England's experience has been very different from that of the other countries at war. With most of her men kept within the country, the birth rate in the first years of the war declined only slightly from the level in the previous years. Despite the many interruptions to normal family life which that country experienced, the birth rate fell by only 5 per cent from 1939 to its low point in 1941. A sharp recovery in 1942, amounting to more than 10 per cent, and a further increase through 1943 brought the English birth rate back to the level of 15 years ago. Figures for the urban population of England through 1944 indicate a gain of about 10 per cent over 1943. Should this reflect the situation for the country as a whole, the birth rate for 1944 will be the highest since 1925.

Still another pattern in the course of the birth rate was experienced in the United States. The slow recovery of the rate since 1933, when the country was at the depth of the depression, continued rather steadily through 1939. Beginning with 1940, the rate mounted rapidly, being accelerated first by the sharp increase in industrial activity and

then by the great upswing in marriages in anticipation of the service draft. In the few years from 1939 to 1943, the birth rate was increased by 27 per cent. It is estimated that the number of births in 1943 was 3,200,000, about one million more than during the bottom year of the depression. The 1943 birth rate corrected for under-registration, was about 24 per 1,000 population, and the highest in nearly twenty years.

With millions of young men single and married, serving abroad in our armed forces, an interruption in the upward sweep in the birth rate was, however, inevitable. In this connection, the following estimates as of February, 1944, are pertinent. About 40 per cent of the married women under 20 had husbands in the armed forces. At ages 20 to 24, the peak of the reproductive period in women, this figure was 29 per cent, and at 25 to 34, it was 13 per cent. With increasing numbers overseas, it is no wonder that the birth rate in the last quarter of 1943 fell below that of the year before. For the entire year 1944, births were about 6 per cent under the figure for 1943; the number of births in 1944 may not be far from three million.

It is interesting that neutral Switzerland and Sweden have both experienced sharp increases in birth rates during the present war, in contrast to the downward trend during World War I. Wartime prosperity is probably a major factor in the recent increases.

The full price of the present war in terms of birth deficits will not be paid until long after the war, because most of the war dead are young men who were just beginning or were soon to take up family responsibilities. The postwar birth rate of Germany is likely to be most seriously affected because her losses of young men have been proportionately heavier than for any other belligerent. The Soviet Union, Poland, and some of the other eastern European countries are also likely to suffer a considerable post-war diminution of births on this account. Some of the countries which were swiftly conquered and occupied by the Germans escaped severe military losses, and their prospects for maintaining their birth rates are therefore brighter. As for England and the United States, it is still too early to know how great the long-term effect on the birth rate will be, because the ultimate size of the war losses for the two countries, depending as it does on the further course of the war, cannot be estimated accurately as yet. We are only now at the stage where our losses are likely to reach serious proportions. But an extended war, even with relatively light casualties, would cause a slump in the birth rate because it would keep so many young men overseas and would also further delay marriages, a circumstance which itself has an adverse effect on the birth rate.

While all the present belligerents will experience a sharp increase in births within a year or two after demobilization, this is again likely to be only temporary. The western world faces a continuation of the long downward trend of birth rates for a considerable period unless there is a prolonged economic revival, combined with intelligent national programs for the encouragement of larger families and a fundamental change in popular attitudes in this regard. Such programs will be urgently needed in many countries not only to maintain birth rates above the wholly deficient pre-war rates, and to make up for any low rates that occurred during the war, but still more in order to make up for the children who would ordinarily have been born to the men killed and maimed in the war. We must not forget that in many countries the loss in births during and after the last war exceeded the numbers killed in action.

From this brief survey it is clear that the effect of war upon birth rates is not

uniform. Many factors enter into the situation, usually adverse, but not invariably so. There is, however, one lesson which may be learned from the experience in the last war. Countries whose birth rates were declining before that conflict continued to show declines after the abnormal period induced by the war had passed. This condition will probably be repeated after this war, perhaps in accentuated form, if nations fail to establish positive population policies or to win popular support for them.

Fellowships in Health Education

Fellowships for graduate work in health education are being offered to qualified applicants by the U. S. Public Health Service, in coöperation with the National Foundation for Infantile Paralysis, Surgeon General Thomas Parran has announced. These fellowships for the collegiate fall term of 1945 are being awarded to meet present and future needs for trained health educators in schools, communities, and local, state, and federal health departments.

Men and women between the ages of 22 and 40 who are citizens of the United States and who hold a bachelor's degree from a recognized college or university may apply.

Fellowships will lead to a master's degree in public health. The 12 months' training period will consist of 9 months in graduate work at the University of North Carolina, Yale University, or the University of Michigan, and 3 months' field experience in community health education under supervision. Applicants must meet the requirements for admission to the universities named. Training in science, sociology, education, and psychology, plus experience working with people are desirable prerequisites.

The fellowships provide a stipend of $100 a month for 12 months, full tuition, and travel for field experience. Candidates must pay their travel to and from the university at the beginning and end of training.

"The existing shortage of trained health educators and the demand for expansion of health education activities indicated both in this country and abroad highlight the need for qualified personnel with a thorough understanding of both public health and education," the Surgeon General said.

Basil O'Connor, President of the National Foundation for Infantile Paralysis, pointed out that coördination of official and voluntary agencies on a community basis will make available the services of competent health educators whose aid will be invaluable in solving community health problems. He stressed the assistance to be given by such a group during an infantile paralysis outbreak in informing residents about the disease and the necessity for long continued aftercare of patients.

Fellowship application forms may be obtained from the Surgeon General, U. S. Public Health Service, Washington 14, D. C. Applications must be accompanied by a transcript of college credits and a small photograph, and must be in the office of the Surgeon General not later than June 1, 1945.

Recent Trend of the Birth Rate*

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THE increase in the birth rate in the last few years in the United States is apparently the greatest experienced since birth records began in this country. The increase is more noteworthy because it runs counter to the declining trend in birth rates which seems to have been in progress for at least 130 years. According to estimates of Whelpton and Thompson,[1] the birth rate among whites in the United States in 1810 was in excess of 54 per 1,000 population. Through the years the rate declined until in 1933, during the heart of the depression, the rate touched an all-time low of about 16.6 per 1,000 population—less than one-third of the rate for 1810. Many factors must have contributed to this long decline; migration to cities, increased cost of child rearing, restriction of child labor, desire for higher living and educational standards, improved social status of women, increased knowledge of birth control, later marriages, and lower marriage rates. It is important to keep these factors in mind in basing conclusions and predictions upon the recent increase in birth rates.

After 1933 the birth rate rose slowly and irregularly for a few years. Then, beginning about 1939, the rate rose more rapidly, going from 17.3 to 22.0 per 1,000 population in 1943. In about four years, therefore, the birth rate, which for so many years had been declining, rose by some 27 per cent!

* Presented before the Vital Statistics Section of the American Public Health Association at the Seventy-third Annual Meeting in New York, N. Y., October 3, 1944.

THE MARRIAGE RATE

To some extent the recent increase in the birth rate seems attributable to the improved economic status of the population. Table 1 shows that during the depression the marriage rate came to its

TABLE 1

Annual Per Capita National Income, and Rates of Marriage and Birth, 1915–43

Year	*Per Capita National Income* *	*Marriage Rate per 1,000 Pop.*†	*Birth Rate per 1,000 Pop.*‡
1915	$378	10.0	25.0
1916	427	10.6	24.9
1917	539	11.1	24.5
1918	583	9.7	24.7
1919	649	11.0	22.4
1920	650	12.0	23.7
1921	479	10.7	24.2
1922	544	10.3	22.3
1923	624	11.0	22.1
1924	612	10.4	22.2
1925	641	10.3	21.3
1926	657	10.2	20.5
1927	644	10.1	20.5
1928	658	9.8	19.7
1929	686	10.1	18.8
1930	559	9.2	18.9
1931	459	8.6	18.0
1932	329	7.9	17.4
1933	337	8.7	16.6
1934	391	10.3	17.2
1935	438	10.4	16.9
1936	507	10.7	16.7
1937	555	11.2	17.1
1938	495	10.2	17.6
1939	541	10.5	17.3
1940	588	11.9	17.9
1941	727	12.6	18.9
1942	903	13.1	21.0
1943	1,084	11.8	22.0**
1944	1,164	10.8**	21.0**

* Data from National Income Unit, Bureau of Foreign and Domestic Commerce.

† Press bulletin: Marriages in the United States: 1914 to 1943, Bureau of the Census, Series PM-1, No. 1 (July 4), 1944.

‡ *Vital Statistics Special Reports*, Bureau of the Census, 19, 1:5 (Dec. 23), 1943.

** Estimated from preliminary monthly data; 1944 estimates based on 11 months of reports.

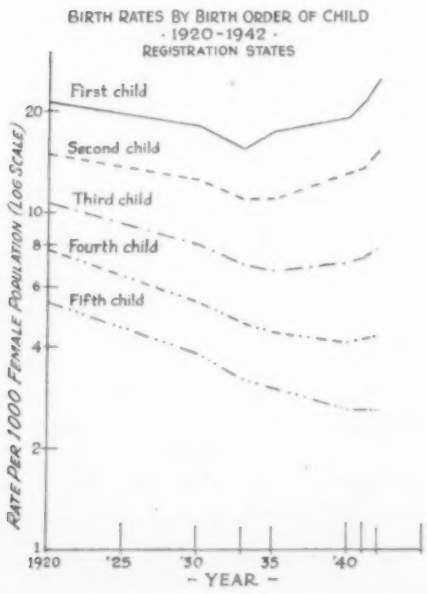
minimum in the same year as did the per capita national income; namely, in 1932. The birth rate came to its minimum the next year. With the subsequent recovery of income, marriage and birth rates also rose.

Hauser [2] has pointed out that the marriage rate also showed appreciable increases (a) shortly after the introduction into Congress of the first Selective Service Bill, June, 1940; and (b) after passage of the bill in September, 1940. Figure 1 shows these marriage increases in the lower curve. The birth rate (upper curve) shows moderate increases following about ten months after these marriage increases. There was also (c) a small increase in the marriage rate a month after the Pearl Harbor attack, December 7, 1941. This increase is somewhat more important than would appear from the graph; for normally the marriage rates are relatively low at the year end.

The highest point in the birth curve came in October, 1942, about ten months after Pearl Harbor. Although it is evident that a considerable portion of the increase in birth rate is attributable to the higher marriage rate, that clearly is not the only explanation, for, as will later be shown, the increase in second and third children indicates that the birth rate also rose in families already established.

Although the highest *annual* birth rate in recent years has been that for 1943, Figure 1 suggests that actually the trend of the monthly birth rates has been downward since about October, 1942. The decline in the marriage rates during 1944 to date * suggests that a continuation of the decline in birth rates is not improbable. As Dr. Dublin and others have pointed out, experience during previous wars suggests that this decline in birth rate will continue until after the return of the military forces from foreign shores.

FIGURE 2



BIRTH RATE CHANGES IN DIFFERENT POPULATION GROUPS

A striking feature of the recent rise in birth rates has been the tendency for certain differences in birth rates in the population to diminish. This tendency of the birth rates to converge can be seen in certain classifications by geographic areas, and by color and economic status.

As to geographic changes: A map [3] published by the Bureau of the Census shows that, from 1941 to 1942, increases in birth rate of 15 per cent or more were found only in the North and on the Pacific Coast; these are normally areas of low birth rates. On the other hand, increases of 5 per cent or less were observed mainly in the southern states which previously had the higher birth rates. Other data show that

* To the end of 1943 the marriage data are based upon 16 states reporting to the Bureau of the Census. The 1944 monthly rates were estimated for states by calculating monthly ratios 1944/1943 for marriage data from 90 cities, and multiplying these ratios into the 1943 monthly marriage rates for the 16 states.

whereas in 1939 the birth rate of the New England states was only 79 per cent as large as the average of the southern states, in 1943 this ratio had increased to 92 per cent.

Urban-rural contrasts in Maryland birth rates appear to have vanished of late. In 1939, the Baltimore City resident birth rate was only about 75 per cent as large as that for the counties of Maryland; in 1943, however, the city rate actually exceeded that for the counties by 1 per cent! For the Registration Area birth *rates* for urban and rural portions are not available at this time; the numbers of births, however, suggest the tendency toward equalization that has been observed in Maryland.

Color differences in birth rates have also become smaller. The ratio of white to colored birth rates in the Registration Area increased from 83 per cent to 93 per cent in 1939–1942.

Turning to economic status: Data from New York and Baltimore suggest that for whites there has been somewhat of a loss in force to the adage that "the rich get rich and the poor get children." Jacobson,[4] using data for New York City whites for the period 1929–1942, found that birth rate differences between high rental and low rental districts of the city decreased markedly during the 13 year period. In 1929, the ratio of birth rates in high rental to low rental districts was 23.8/39.8, or 60 per cent. By 1942 this ratio had increased to 29.4/31.1 or 95 per cent. Although the white birth rates tended to converge during the entire 13 year period, the process was most rapid subsequent to about 1939.

Dr. W. Thurber Fales has kindly made unpublished data from Baltimore available, which indicate a similar convergence among the different economic classes of whites in Baltimore between 1938–1939 and 1942–1943; but among the colored the effect was the opposite. Table 2, which is based upon the Fales data, shows in column 2 that the districts of Baltimore with the lowest rentals (under $15 per month) had in 1938–1939 a white birth rate of 15.3 per 1,000 population, which was about 60 per cent higher than the white rate of 9.6 in the districts with the highest rentals (over $45 per month). Column 3 of the table shows that by 1942–1943 this excess of birth rate among the relatively poor whites had shrunk to about 15 per cent. This was because in the 4 year interval the birth rates in the more prosperous white districts were multiplied by as much as 2.22 as against only 1.60 or less in the poorer districts.

TABLE 2

Birth Rates per 1,000 Population, 1938–1939 and 1942–1943, in Districts of Specified Monthly Median Rentals. Baltimore, Md.

	Whites			*Colored*		
	Annual Birth Rates		*Ratio 1942–1943*	*Annual Birth Rates*		*Ratio 1942–1943*
Monthly Rental *	*1938–1939*	*1942–1943*	*1938–1939*	*1938–1939*	*1942–1943*	*1938–1939*
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Under $15	15.3	24.5	1.60	19.6	32.9	1.68
15–19	16.9	24.2	1.43	24.0	33.7	1.41
20–24	15.8	23.0	1.45	22.9	33.1	1.44
25–29	14.0	22.2	1.58	13.6	19.1	1.39
30–34	12.4	21.7	1.75	14.6	19.0	1.30
35–44	12.2	22.3	1.83	14.2	19.0	1.33
45+	9.6	21.4	2.22	10.9	13.7	1.26

* Median contract or estimated monthly rental in group of census tracts.

Among the colored, however, the change was the reverse, in that during the 4 year period the divergence in birth rates between poor and prosperous districts increased. Column 7 shows that the factor of increase for the colored poor was as much as 1.68—slightly greater than for white poor; but for the prosperous among the colored the factor was as low as 1.26. No explanation for this unexpected result can be offered at this time.

AGE OF MOTHER AND BIRTH ORDER

It is common knowledge that for many years the number of children per family has been growing smaller and that children have been increasingly limited to the earlier years of married life.

Data for the Registration States [5] indicate that from the end of World War I to about 1930 there was practically no decline in the birth rate for mothers aged 15–19. With increasing age of mother, however, the drop in birth rates became progressively more pronounced until at ages 40–44, the rate declined about one-third in the decade following the war. Since 1933 and especially since 1938 the birth rate has increased sharply for mothers of all ages up to about age 35. For the older ages there has been hardly more than a slowup in the previous rate of decline.

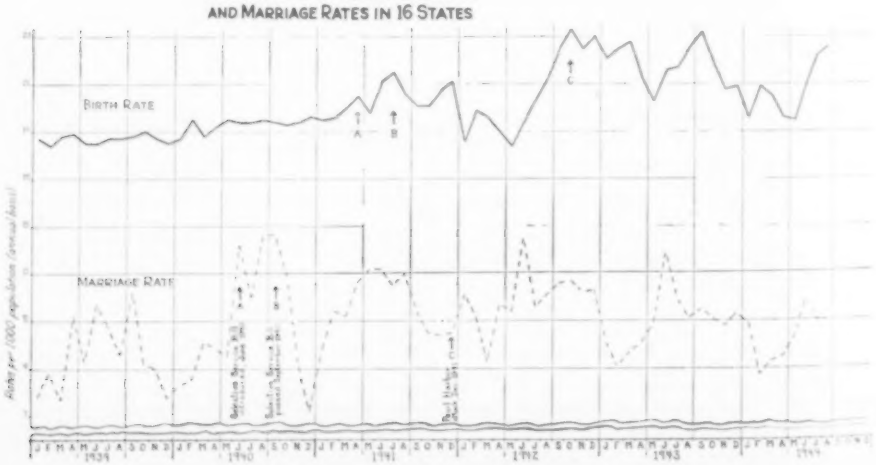
Figure 2 * shows a related phenomenon. Prior to about 1933 the birth rate was clearly declining for all birth orders, the rate of drop being greatest for the higher birth orders (later children born). Since 1933, however, the birth rate for the first and second orders have increased about 50 per cent. Note from the graph that the 1942 birth rates for the first and second children were actually higher than the 1920. For the higher birth orders there has been progressively less change from the previous trends.

Some preliminary 1943 data furnished by Dr. Ruth Puffer of Tennessee suggests that an interesting change in birth order relationships may be in prospect during the next few years. In Tennessee the rate for the first birth order had al-

* In Figure 2, points were plotted only for 1920, 1930, 1933, and certain years thereafter indicated on the base line (page 322).

FIGURE 1

BIRTH RATES IN THE UNITED STATES AND MARRIAGE RATES IN 16 STATES



ready begun to decline in 1943. For the second birth order, however, the 1943 rate was higher than before. This outcome is perhaps not too surprising when one remembers that the first effect of a rise in the marriage rate is an increase in the number of first born; another year or two must elapse before the higher birth orders can be affected by the change in marriage rate.

SUMMARY

The birth rate, which has had a declining trend in this country for over a century, recently experienced a noteworthy increase. Starting with an alltime low of 16.6 per 1,000 population in 1933, the rate attained a peak of about 22.0 in 1943. Since 1939, when the increase became most rapid, there has been a rise of about 27 per cent in the rate.

Appreciable increases in the birth rate appeared approximately ten months after rises in the marriage rate which occurred at (1) the upturn in per capita income in 1933, initiating recovery from the industrial depression; (2) the introduction into Congress of the first Selective Service bill in June, 1940; (3) passage of the bill in September, 1940; and (4) the declaration of war following the Pearl Harbor attack, December 7, 1941.

The increase in birth rates has been heaviest in the North and Far West, in cities and among relatively prosperous whites. These groups normally have low birth rates. The effect, therefore, has been to diminish geographic and social differences in fertility.

The increase in the birth rates has been most pronounced among the younger mothers and for the first and second children of the family. For these, recent birth rates have been the highest in more than twenty years.

The highest point to date in the monthly birth rate in the current movement was reached in October, 1942. A slight decline in the subsequent trend, the drop in 1944 marriages to date, and experience of World War I suggest that unless new forces intervene, a further decline in the birth rate is likely, continuing until the return of appreciable numbers of the military forces when, if history repeats itself, the birth rate may be expected again to increase, at least temporarily.

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Effect of Increased Birth Rate on Future Population*

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THE extent to which the size and composition of the future population will be affected by an increase in the birth rate depends primarily on the amount and duration of the increase. To make my discussion of these matters specific rather than abstract, I will base it on recent experience in the United States. This is not unique; on the contrary in certain other countries the birth rate has been behaving much the same as here, and with much the same effect on future population.

The increase in the United States birth rate since 1940 has attracted much attention, for it has been large and rapid, unprecedented in our demographic history. The crude birth rate, i.e., births per 1,000 persons, was 19.3 in 1940, 20.3 in 1941, 22.5 in 1942, and 23.3 in 1943, rising 4 points in three years.† The most rapid rise recorded previously was half this size, from 25.1 in 1919 to 27.1 in 1921.

Because of population growth the number of births has climbed even more rapidly than the birth rate, from 2,550,000 in 1940 to approximately 3,120,000 in 1943, up over 22 per cent, and reaching an all time high. Judging from the provisional data for the first eight months of 1944 there probably will be between 2,800,000 and 3,000,000 births in 1944, making it the fourth year in history to come close to the 3,000,000 mark.‡ Before 1942 the record was held by 1921, with approximately 2,956,000 births.

Some of the effects of this jump in the birth rate and the number of births have been obvious for many months. Gynecologists, supervisors of maternity wards, manufacturers of diapers and other infant items, and registrars and their assistants can testify wholeheartedly on this point. Other effects are casting their shadow, which can be seen by those who know where to look. Well informed grammar school principals already are thinking of how they are going to take care of a 22 per cent increase in the number of first graders from 1946 to 1949, of second graders from 1947 to 1950, and so on. Other principals are due to be surprised in three or four years. Looking farther ahead, it is obvious that the recent rise in the number of births will cause high school enrollment to jump from

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* Presented before the Vital Statistics Section of the American Public Health Association at the Seventy-third Annual Meeting in New York, N. Y., October 3, 1944.

† All figures for births and birth rates in this paper have been adjusted to allow for incomplete registration. The proportion of births registered was 92.5 per cent from December 1, 1939, to March 31, 1940, according to *Vital Statistics Special Reports*, Department of Commerce, Bureau of the Census, Vol. 17, No. 18. It is assumed to have been 93.0 per cent in 1941, 93.5 per cent in 1942, 94.0 per cent in 1943 and 94.5 per cent in 1944.

‡ Registered births in 1944 are estimated to be from 5 per cent to 7 per cent less numerous than in 1943, in accordance with data in *Monthly Vital Statistics Bulletin*, Department of Commerce, Bureau of the Census, Vol. 7, Nos. 6 and 8. (Later numbers of the *Bulletin* indicate that there were 4.7 per cent fewer births in 1944 than in 1943, or a total of approximately 2,970,000.)

1954 to 1958, and college enrollment from 1958 to 1962. Such increases in the number of children and youths undoubtedly will be welcomed by the manufacturers and distributors of roller skates, school supplies, and other items consumed by the younger portion of the population.

Other effects of the recent increase in births are less closely associated with age, hence will be spread out over a longer period and cannot be dated as exactly as the foregoing. From 1958 to 1962, however, there should be an increase in the number of young adults entering the labor market, which will tend to weaken it. Employers of young unskilled workers will have less difficulty than formerly in hiring as many as they wish. The number of marriages should rise from 1958 to 1967 or thereabouts, with a corresponding increase in the demand for housing, and a strengthening of the real estate market. Many years later (from 2005 to 2008, if 65 is the customary retirement age under an expanded social security system) the administrators of the system will have a 22 per cent increase in the number of persons retiring. This is by no means a complete list of the aftereffects to be expected because of the recent increase in the number of births. Many others will occur to those who think about the matter. Only one more need be mentioned here, namely, the increase in the number of marriages from 1958 to 1967 or thereabouts should be followed—with an appropriate lag—by an increase in the number of births, which will start another sequence of the events just mentioned.

The foregoing discussion deals with relatively elementary and obvious events to be expected as a result of the recent increase in the birth rate. Of more interest is a discussion of how much this increase has enlarged the present population, and how much it is likely to add to our numbers in the future. These questions are much harder to answer precisely, partly because the preparation of an answer requires the setting up of a bench mark from which to measure the increase in the birth rate. Should this be the lowest rate of recent years? If so, 1933 is the obvious choice. Had the crude birth rate remained as it was in 1933 there would have been during the four years 1941–1944 a total of about 9,750,000 births instead of the 11,750,000 (more or less) which will occur, a difference of 2,000,000. Hence, if the 1933 rate is accepted as the standard from which to measure, the recent increase has added nearly 1,920,000 persons to the present population.

But is it correct to take as a standard the birth rate set by conceptions during the worst year of the depression? Demographers have known for many years that economic changes have an important influence on the birth rate, a worsening of business conditions tending to depress the birth rate, and an improvement to increase it, in each case with an appropriate lag.[1, 2] Much, if not all, of the slow rise in the birth rate from 1933 to 1940 was merely the result of economic recovery. An examination of marriage statistics shows clearly that hundreds of thousands of marriages were postponed during 1930–1933, to be performed subsequently (often to another person, of course) as employment and earnings increased. This in itself influenced the birth rate trend. In addition, the worsening of the depression during 1930 to 1932 caused the postponement of hundreds of thousands of pregnancies by that large group of the population who plan the number and spacing of their children. Some of these pregnancies were put off forever by divorce, sterility, death, and other factors, but many occurred during 1938 and subsequent years.

In studying a series which fluctuates

around a trend line, as births and birth rates have done in the past, it is sound statistical procedure to measure an unusual situation by comparing it with what would be expected as the normal development. Had World War II not started in 1939, and had this nation not entered it in December, 1941, the best guess may be that economic recovery and the rise in the birth rate would have continued to date at the slow pace of 1933 to 1940. If so, the crude birth rate in 1943 would have been approximately 19.3 instead of 23.3, and the number of births during the 4 years 1941–1944 would have been about 10,300,000 instead of 11,750,000. On this basis the recent jump in the birth rate has meant approximately 1,450,000 extra births, or an addition of about 1,390,000 to the present population. This is a large number, but relatively it is small, barely 1.0 per cent of the total population.

Unfortunately for those wanting rapid population growth, another important factor must be considered. In determining the *long-time* as distinguished from the *short-time* influence of an unusual departure from a trend, it is necessary to determine whether there is likely to be in the future an unusual departure in the opposite direction, and if so, how large. Specifically, how much of the wartime increase of between 1,450,000 and 2,000,000 births during 1941–1944 consists of births which ordinarily would have occurred in subsequent years, but were merely pushed ahead because of the war? Obviously no one knows exactly. The best that can be done is to analyze relevant information, and develop an informed opinion.

An examination of marriage statistics throws some light on the matter. During the 30 years from 1910 to 1939 the number of marriages per 1,000 women 17 to 29 years of age averaged 88.5 and showed no significant long-time trend.[3] During 19 of these 30 years it was between 84.5 and 92.5; in the other 11 years it was reduced or increased beyond these limits by the events of World War I (1917–1921), or by the worsening of, or the recovery from, the last depression (1930–1933 and 1937). Using the 30 year average as a normal rate, the normal number of marriages for any year can be computed. Subtracting this from the actual number gives the estimated surplus or deficit. During the first four years of the depression a large deficit in marriages was accumulated—nearly 800,000, or an 8 months' quota. A beginning in reducing the deficit was made in 1934. By the end of 1940 it was almost down to 300,000, and a year later it was gone. In 1942 the upward trend brought the marriage rate to a record high (114.7), 10 points above the previous high in 1920, and 26 points above the 30 year average. As a consequence, the actual number of marriages exceeded the normal number by about 400,000. During 1943 the rate was lower, nevertheless there was a current surplus of nearly 210,000, which brought the cumulative surplus at the beginning of 1944 to over 500,000. Had the war not occurred, it is almost certain that there would have been from 400,000 to 600,000 fewer marriages in the United States during 1940–1943, and that a very large proportion of these marriages would have occurred later on in the decade. As it is, a slump in the marriage rate is to be expected in the future. Since an important proportion of couples have their first child within a year or two after marriage, the fluctuations in the marriage rate furnish an excellent reason for thinking that some hundreds of thousands of the births which occurred during 1941–1944 would have occurred a few years later if there had been no World War II.

A more exact estimate of the extent to which the recent rise in the birth

rate is merely a borrowing against the future can be obtained by utilizing birth rates by age of mother and ordinal number of child, and census data on the proportion of women in certain age groups who had borne none, one, and other numbers of children. According to the 1940 census, among the white ever married women who were 50 years old (i.e., who had recently completed the childbearing period), and for whom a report was obtained as to number of children ever born, 85.1 per cent had borne one or more children.* Only a negligible number of the 9.0 per cent of the white women aged 50 who were spinsters in 1940 had borne a child, not because illegitimacy was negligible in the cohort, but because single mothers usually marry subsequently. Combining these proportions, 77.5 per cent of all white women aged 50 in 1940 had borne one or more children, and 22.5 per cent had not borne any. The corresponding figures for 1910 are 82.6 per cent and 17.4 per cent.

It must be remembered that most of the fertile women aged 50 in 1940 bore their first child when they were between 15 and 30 years of age, that is, between 1905 and 1920, with 1912 as the modal year. Since that time the trend of the birth rate has been downward, chiefly because of a decrease in the average number of children per family, but to some extent because of an increase in the proportion of women unable or unwilling to have a child. Consequently, among the women who will reach age 50 from 1965 to 1980 and who have been having most of the 1944 first births, the proportion bearing no children should be somewhat less than it was for women aged 50 in 1940. If the proportion is estimated by extrapolating at a slightly decreasing rate the trend between the censuses of 1910 and 1940, the figure for women aged 50 in 1958 is 74.8 per cent, and for those aged 50 in 1972 is 73.2 per cent. Since the modal age at birth of first child is 22, these percentages represent approximately the current situation for 1930 and 1944, respectively.

If birth rates by age of mother and order of birth of child did not vary from year to year, the percentage of women living to age 50 who would bear one or more children could be computed correctly from these rates themselves. The process would consist merely in dividing the number of first births to women aged 15–19 by the number of women of that age, multiplying by 5, repeating the operations for succeeding 5 year age periods, adding the quotients, and multiplying by 100. The underlying assumption is that the childbearing experience of the women in the series of cohorts during a given year is equivalent to the experience of the women in a single cohort over a series of years.* But because there are fluctuations in first birth rates, only those for a normal year will give the correct percentage. It is the converse of this statement which is useful here, namely, that comparing the percentage thus computed for any year with a normal percentage will show the extent to which the first birth rates of the year in question are abnormal.

If 1930 first birth rates by age of mother had remained in effect indefinitely, 75.8 per cent of the white women living to age 50 would have borne one or more children. This is very close to the normal percentage for 1930 (74.8 per cent) estimated from the intercensal trend. As the depression worsened the age-specific first birth rates fell far below the 1930 figure,

* This is an average of the percentages shown for the age periods 45–49 and 50–54 in *Differential Fertility, 1940 and 1910.* Dept. of Commerce, Bureau of the Census, 1943, p. 7.

* A second, but minor, assumption is that women dying before age 50 have the same birth rate at each age of life as women living to age 50 or older.

hitting bottom in 1933. If they had continued at that point for a generation, only 64.8 per cent of the white women would have had one or more children. The 1933 percentage was 10 points, or nearly one-seventh, below the estimated normal, and the deficit in the first births was about 95,000. After 1933 the first birth rates rose, but did not reach the estimated normal until 1937. At the beginning of that year the accumulated deficit in first births amounted to nearly 220,000. With somewhat higher first birth rates during 1938–1940, however, the deficit was wiped out by about the middle of 1940.

It was after 1940 that the first birth rates really jumped, up nearly 11 per cent in 1941, and nearly another 19 per cent in 1942. In a cohort having the 1941 rates 91.8 per cent of the women living to age 50 would bear one or more children compared with a normal of about 73.5 per cent. With 1942 came the impossible. In a cohort having 1942 age-specific rates for first births, 109 of each 100 women living through the childbearing period would have at least one child. Obviously the age-specific first birth rates could not remain so high for any length of time. Furthermore, they could achieve such high marks temporarily only if they had been abnormally low during preceding years, or would be abnormally low during following years. Because the deficit in first births accumulated during the depression was made up by about the middle of 1940, the surplus piled up since then must be at the expense of coming years. In 1941 it amounted to approximately 188,000 first births, in 1942 to approximately 365,000, and in 1943 to approximately 450,000. By the end of 1944 the advance drawing on future years will total in the neighborhood of 1,420,000 first births, or the number which would occur normally in a little less than two years.*

It may be argued that the war has caused a substantial rise above what otherwise would have been the normal proportion of white women bearing one or more children among those living to age 50, hence that the first births of future years have not been drawn upon to the extent just indicated. Such a rise could come about through a decrease in the proportion of women remaining single until 50 or older, a decrease in the proportion of married women bearing no child, or an increase in childbearing among women remaining single to age 50. The latter appears unimportant, not because illegitimacy has failed to increase recently, but because most of the women bearing illegitimate children marry before age 50. Consequently attention can be concentrated on the other two variables.

In 1940, 9.0 per cent of the white women aged 50 had not been married. In prior censuses back to 1910 the percentage varied between 8.9 and 10.0, and under normal conditions would be expected to continue within these limits. The unusual conditions accompanying World War II undoubtedly have caused some women to marry who would never have done so otherwise. In view of the lack of variation in the past, however, it would be surprising if the proportion who will remain single until age 50 has been reduced by more than 10 per cent among white women now between 15 and 50. Such a reduction would mean that when these

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* The number of births in a given year per 100 births in the preceding year, used in these and subsequent estimates, is as follows:

	1942	*1943*	*1944*
All births	111.8	103.9	94
White births	112.8	104.9	95
First white births	118.8	107.2	93
Second white births	112.7	105.9	96

The ratios for 1942 and that for all births in 1943 are computed from official reports. The ratio for all births in 1944 is obtained as explained in the first footnote. The remaining ratios are estimated from the foregoing. The ratio for white first births is expected to decline more rapidly than the other ratios after 1942 because it rose more rapidly prior to 1942.

women reach age 50, 8.1 per cent will be spinsters and 91.9 per cent will have been married.

In 1940, 14.9 per cent of the ever married white women aged 50 had not borne a child alive. In 1910 (the only other census for which such information is available) the percentage was about 9.3. Some of these women were childless because their marriage was broken by death or divorce, others because of sterility, and others because they did not want children. Information regarding the relative importance of these three types is fragmentary. By far the most representative group for which data are available is a typical sample of New York City white wives under 50 and married 10 years or more, reported by Kiser.[4] A little over 9 per cent of these women had never borne a child, and about 7 per cent had never been pregnant. Nearly 78 per cent of the latter had done nothing since marriage to prevent conception, and nearly 9 per cent had practised contraception only part of the time. In other words, between 5.4 and 6.1 per cent of all the women had not been able to conceive, and over 2.0 per cent had conceived but had not been able to bear a child alive. If these New York City women are typical of ever married women elsewhere in the United States with respect to the incidence of sterility and pregnancy wastage, the proportion of ever married women bearing no children could be reduced in theory from 14.9 per cent, the 1940 figure, to about 8.0 per cent. This is a drop of nearly 50 per cent. But since some wives prefer to be childless, and others lose their husbands by death or divorce before they are ready to start childbearing, a drop of 40 per cent seems a reasonable maximum. On this basis, 91.1 per cent of the women reaching age 50 would bear one or more children, about the same proportion as that shown by the 1910 Census.

If the proportion of women remaining single up to age 50 were to be reduced by 10 per cent, and the proportion childless among those marrying reduced by 40 per cent, the proportion bearing one or more children would be raised to 83.7 per cent. Assuming that such changes took effect at the beginning of 1941, the boom in first births will have mortgaged the future by nearly 1,000,000 by the end of 1944. This figure, and that of 1,420,000 obtained earlier by continuing past trends, represent probable upper and lower limits for the white population. Allowing for corresponding changes in colored first births (which occurred on a smaller relative scale) gives an estimate for the entire nation of between 1,050,000 and 1,500,000 first births moved ahead. In my opinion the advance drawing on the future will be found to come much closer to the larger than the smaller figure.

Prosperity and the war have also brought a sharp rise in the age-specific rates for second births to white women, averaging nearly 5 per cent from 1940 to 1941, over 12 per cent from 1941 to 1942, and probably 5 to 7 per cent from 1942 to 1943. In view of such changes it is desirable to determine whether the second births of future years have been mortgaged as well as the first births. The 1910 Census shows that 73.6 per cent of the white women aged 50 had born a second child. By 1940 the proportion had declined to 62.7 per cent. Since most second births occur to women aged 20–34, most of the women aged 50 in 1940 had borne their second child between 1910 and 1925, with 1914 as the modal year. In view of the downward trend of the rate for second births between these years and 1940, a normal percentage for women in the cohorts having second births in 1944 would be smaller. Extrapolating the trend between the two censuses but at a slightly declining rate, gives 57.6 per

cent as a normal for 1930, and 53.2 per cent for 1944. From 1930 to 1939 the second birth rate was below normal in every year, and by the end of 1939 the accumulated deficit amounted to about 470,000 second births. It was reduced slowly during 1940 and 1941, rapidly thereafter, and probably disappeared in the latter part of 1944. In short, if this concept of normal is correct, by the end of 1944 there will have been an advance drawing on the future of nearly 65,000 second births.

It is easily possible that the long-time downward trend of age-specific rates for second births has been less rapid than was assumed above. Furthermore, it is easily possible that the recent rise represents a real shift of women from the one-child to the two-child category. According to the normal percentages for 1944 which were used above, 9.0 per cent of the women living to age 50 would be single, 17.8 per cent would not have borne a child, and 19.9 per cent would have borne only one child. Stated differently, only 72.8 per cent of the women bearing one or more children would have borne two or more. Among women aged 50 in 1940, however, the corresponding figure was 80.9 per cent. If the decline was only seven-eighths as large as estimated above, or if a little less than one-third of it had been regained as of 1941–1944, there would have been no mortgaging of future second births. It is certain, therefore, that the wartime rise in the birth rate has not drawn heavily on the second births of future years, and it is barely possible that these births have not been mortgaged at all.

The recent rise of the age-specific rates for third births has been much less (both absolutely and relatively) than that for first or second births, and has carried them little, if any, above the 1930 figures. Consequently, there is no need to analyze third births in the foregoing manner. The rates for fourth births have risen still less, those for fifth births had not risen at all up to 1942, and those for eighth and higher order births have continued to decline, and in 1942 averaged about 45 per cent below the 1930 figures.

Summing up the material just presented, because of the wartime rise in the crude birth rate, the total number of births during 1941 to 1944 will be about 2,000,000 above the number that would have occurred if the 1933 rate had remained in effect, and 1,450,000 above the number that would have occurred if the rate had followed the 1933–1940 trend. This will add between 1,920,000 and 1,390,000 persons to the population as of December 31, 1944. An intermediate estimate of 1,700,000 births and 1,630,000 persons probably is more accurate than either extreme. However, between 1,050,000 and 1,500,000 of the births during 1941–1944 are first births which would have occurred during 1945 to 1955 if it had not been for the war. In my opinion 1,350,000 is a conservative medium figure. Deducting 1,350,000 from 1,700,000 leaves 350,000 as the extra births which are due to the wartime rise of the birth rate. These births will increase the 1955 population 10 years of age or older by about 335,000, or by less than one-third of 1 per cent. Even if one takes the high estimate for the wartime increase of births during 1941–1944, viz., 2,000,000, and the low estimate for the number of first births merely moved ahead, viz., 1,050,000, the 1955 population 10 years of age or older will be increased by only about 910,000, or less than 1 per cent. As explained currently in the discussion, however, this high estimate is no more probable than the corresponding low estimate based on the opposite extremes, which shows that first and second births moved ahead exceed the entire increase in births during 1941–1944, hence that this increase will not add at all to the

number of persons living 10 years from now.

If the size of the future population is to be increased to any great extent by the recent rise of the crude birth rate, this rate must remain at or above the 1943 figure. It cannot do so unless the decline of the rates for first births which is certain to come in the next few years is offset by increases of the rates for second, third, and higher order births. In other words, there must be a substantial increase in the average number of children per couple as well as a decrease in the proportion of couples who are childless. No one can say with assurance that such changes will, or will not, occur. My own opinion is that the rates for second, third, and higher order births will not rise sufficiently, hence that the crude birth rate will fall. The reasons for this opinion have been given in detail elsewhere [5]; I will merely summarize them in two sentences. The average size of planned families has been substantially smaller than that of unplanned families in the past and will be smaller in the future, though perhaps in lesser degree. Any tendency for the average size of planned families to increase in the future will be more than offset by the increase in the relative frequency of planned families which will result from the continuing diffusion through the population of information about effective methods of contraception.

If the opinion just outlined is correct, may I point out one final series of effects which the wartime rise of the crude birth rate will have on the future population. By moving approximately 1,350,000 births ahead a few years, it will cause a large drop in the number of births some time between 1944 and 1950 to 1955. Corresponding declines will occur six years later in the number of first graders, and afterwards—with an appropriate lag—in students entering high school and college, in workers entering the labor market, in couples marrying and setting up their own home, and in all the other activities associated with certain ages. In short, the war has caused the birth rate to fluctuate sharply but temporarily above its trend, and soon will cause it to fluctuate almost as much below its trend. These fluctuations have already introduced certain significant irregularities into the age composition of the population, and will soon introduce others but in the opposite direction. Their effects will be evident for many decades. The size of the future population, however, has not been and will not be, affected appreciably.

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Nutrition and Its Relationship to the Complications of Pregnancy and the Survival of the Infant*

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INCREASING awareness of the possible importance of nutrition during pregnancy to both mother and fetus has stimulated considerable interest in this field. In the last few years several prenatal studies on large numbers of women have been carried out which have included evaluation of their diets during pregnancy.

The first report of this type to gain widespread attention was the Toronto study of Ebbs, Tisdall, and their coworkers.[1, 2, 3] A group of 120 women on poor diets and low incomes were studied during the last half of pregnancy as controls for 90 women from the same income level and on equally poor diets who were supplied with supplementary rations of milk, cheese, oranges, tomatoes, wheat germ, and vitamin D capsules, and 170 women with fairly adequate incomes who were instructed in the type of diet considered desirable for pregnancy. The incidence of miscarriages, premature births, stillbirths, and deaths in early infancy was significantly lower in the groups on supplemented and good diets, and these women also enjoyed better health throughout pregnancy, had fewer complications, and proved to be better obstetrical risks than those left on poor diets. There was also a marked increase in the incidence of minor and major diseases in the infants born of mothers in the poor diet group. In a large proportion of the cases one could tell the diet group of the mother by the appearance of her baby at 6 months of age.

Williams and Fralin[4] studied the nutrition of 514 women in relation to the course of their pregnancies, the puerperium, and the condition of their infants at birth. Their data seemed to show no relationships between the diet during pregnancy and the complications of pregnancy (except a relationship between vitamin B_1 and a history of nausea and vomiting in early pregnancy). No relationship was found with the puerperium or with the incidence of stillbirths, premature births, or neonatal deaths. Apparently a nutrition intake for only one 7 day period was used as representative of the diet during pregnancy.

The People's League of Health of England[5] investigated the effect of the nutrition of 5,022 pregnant women upon maternal and infant morbidity and mortality. Supplementary minerals and vitamins were given to one-half of the women studied. This supplementary feeding appeared to reduce the incidence of toxemia approximately 30

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per cent. The reduction in the number of premature births in the supplemented group was statistically significant. No other significant relationships were found.

Balfour [6] reports another study, recently made in England and Wales, in which 11,618 pregnant women chosen from the lowest income groups were fed a supplement of marmite or other yeast extract sufficient to furnish 240 I.U. of thiamin daily, or a proprietary preparation which furnished a rich supply of vitamins A and D, as well as calcium, phosphorus, and iron. Their controls were 8,095 pregnant women from the same area. A study of any differences in the two groups made it seem fair to assume that any favorable results found in the fed group were due to the food supplements. The supplementary feeding of marmite or a similar yeast extract resulted in a statistically significant reduction in the number of stillbirths and in the neonatal mortality rate. There was also a reduction, but not significant, in the infant mortality rate in the group fed the supplement rich in vitamins A and D and in minerals. With either supplement there was also a slight but not statistically significant reduction in the incidence of toxemia and in the maternal mortality rate. Balfour states that, owing to the large number of cases studied and deaths observed, the differences in stillbirth rates and neonatal mortalities are significant beyond any reasonable doubt.

Dieckmann, Adair, *et al.*[7] have studied a group of 553 pregnant women to determine if additions of calcium, phosphorus, iron, or vitamins A and D to the diet had any beneficial effects on the course of pregnancy or insured a higher incidence of normal infants. They concluded that "a study of the effect of the additions to the diet on the various complications of pregnancy showed some differences, but no conclusions could be drawn. No significant effects were noted on the fetus that could be attributed to diet."

As a part of the research program on the growth and development of the well child undertaken by the Department of Maternal and Child Health of the Harvard School of Public Health, we [8, 9] have made a study of 216 women and their infants in an attempt to clarify further the influence of diet during pregnancy upon fetal growth and development as well as upon the course of pregnancy, labor, delivery, and the puerperium. We obtained detailed nutrition histories at regular intervals during pregnancy, supplemented by records of food intake which the women kept.

The diets were evaluated in relation to a set of nutritional standards which approximate those later recommended by the National Research Council. A statistically significant relationship was found between the diet of the mother during pregnancy and the condition of her infant at birth. In the 216 cases studied every stillborn infant, every infant who died within a few days of birth except one, the majority of infants with marked congenital defects, all premature and all "functionally immature" infants were born to mothers whose diets were very inadequate. In somewhat greater detail, in the 31 cases in which the mother's diet was "good" or "excellent," 42 per cent of the infants were "superior," that is, they had no physical count of any kind against them either at birth or within the first two weeks of life, while in the group of 149 mothers whose diets were considered "fair" only 6 per cent of the infants were "superior," and in the group of 36 infants whose mother's diets were "poor to very poor" only one infant fell into this "superior" classification.

If we consider the infants with one, occasionally two, minor physical counts

against them who were rated in "good" physical condition, we find that in the "good" or "excellent" diet group 52 per cent of the infants, in the "fair" diet group 44.5 per cent of the infants, and in the "poor to very poor" diet group only 5 per cent of the infants were in "good" physical condition. In the case of infants considered to be in the "poorest" physical condition (i.e., were stillborn, died within a few days of birth, had marked congenital defects, were premature, or were termed "functionally immature") it was found that 67 per cent of the infants whose mothers' diets were rated "poor to very poor" fell into this classification, while only 5 per cent of the infants of the "fair" diet group, and 3 per cent of the infants in the "good or excellent" diet group were in this classification.

The average birth weight of the infants whose mothers' diets were rated "good or excellent" was 8 lb., 8 oz., that of infants born to the women in the "fair" diet group was 7 lb., 7 oz., and that of infants born to women in the "poor to very poor" diet group was 5 lb., 13 oz. The average birth length of the infants in the "good or excellent" prenatal diet group was 51.8 cm., 50 cm. in the "fair" diet group, and 47.2 cm. for the infants whose mothers' diets were rated "poor to very poor."

A statistically significant relationship was also found to exist between the prenatal diet and the course of pregnancy; this relationship was not as marked as that existing between the mother's dietary rating during pregnancy and the condition of the infant at birth. Sixty-eight per cent of the women having "good or excellent" diets during pregnancy experienced a normal course, while only 42 per cent of the women with "poor to very poor" diets had a normal pregnancy. These findings suggest that the fetus may suffer to a greater degree and more frequently than the mother from inadequate maternal diet. In other words, the fetus may be parasitic upon the mother only to a certain extent, determined by the mother's own nutritional state at the time she enters pregnancy and by the quality and quantity of her diet thereafter.

Warkany,[10] whose recent work on animals has contributed so much to our realization of the part which maternal dietary deficiency may play in congenital malformations, suggests the following intriguing explanation for the observed maternal-fetal relationship: "The stores of the maternal tissues act as 'buffers' which prevent deprivation of the developing embryo as long as possible. In fact, it was assumed until recently that these maternal stores either protect the offspring completely, thus resulting in the delivery of normal young, or that in case of extreme dietary deficiency the embryos die *in utero*. Although there is some truth in this 'all or none' theory it is not entirely correct. Between these two extremes there exists a narrow range in which maternal nutritional deficiency may result in arrest of the embryo's development without causing death. In this case congenitally deformed offspring may be the result."

In our study no woman whose diet was rated "good" or "excellent" had toxemia, while an 8 per cent incidence occurred among women whose diets were considered "fair," and among the women in the poorest diet group there was a 44 per cent incidence of toxemia. No statistically significant relationship was found between the prenatal diet and the duration of labor. However, there were many more difficult types of delivery in the "poor to very poor" diet group despite the fact that these infants averaged almost 3 lb. lighter in weight at birth than the infants of mothers whose diets were "good" or "excellent." While there seemed to be a

tendency for a relationship to exist between prenatal nutrition and the occurrence of major complications in the postpartum period, certainly there was no clearly defined relationship such as was shown with the complications of pregnancy.

Up to the present time it has been generally accepted that the weight of the new-born infant is not materially affected by the diet of the mother during pregnancy unless it is extremely deficient or possibly excessive in calories. The average weight gain for the series of women whom we studied was 24.6 lb. We found that the underweight woman who gained approximately the same or more than the normal or overweight woman during pregnancy gained more weight herself in relation to her preconceptional weight and gave birth to a smaller infant. The very overweight woman consuming inadequate calories lost weight herself but had a larger baby than the normal or underweight woman with adequate calories. While these data have not yet been published in detail, it is possible to state that here again is evidence suggesting that the fetus is parasitic upon the mother only to a degree, and that, if a woman enters pregnancy below her ideal normal weight, attention should be given to this fact and she should be allowed to gain about 24 lb. above her ideal weight, otherwise her own body tissues tend to utilize food at the expense of her unborn child.

Arnell, *et al.*[11] have emphasized the importance of a diet well supplied with protein during pregnancy. In studying a group of 225 women in the New Orleans area they found lower average hemoglobin and serum protein levels, a higher incidence of preëclampsia, a strikingly higher incidence of edema, increased maternal morbidity, and increased fetal mortality among the cases on diets poor in protein. Although these trends were found, no definite conclusions were drawn. A study of their work illustrates the apparent difficulty in human studies of proving conclusively that a given effect is due to a specific nutrient.

While we[12] found a significant relationship between the general prenatal dietary rating and the incidence of toxemia, we found no significant relationship with protein alone. When protein was low in the diet, many other factors were often low also. Our study also revealed a very significant relationship between the protein content of the mother's diet during pregnancy and the birth length of her infant. There was a somewhat less striking but still significant relationship with birth weight. These relationships are of such a magnitude that when the cases are sorted according to the number of grams of protein in the mother's diet, they are observed with every 10 gm. difference in protein. For practical purposes this study indicates that less than 75 gm. of protein daily during the latter part of pregnancy results in an infant who will tend to be short, light in weight, and likely to receive a low pediatric rating. It is impossible to prove conclusively that protein alone is the significant factor, but from a practical standpoint it makes little difference, for if the diet contains the protein-rich foods it is probable that any other factors of importance in these respects are supplied also.

The most significant finding of the majority of the recent studies is a markedly lowered incidence of stillbirths, premature births, and early neonatal deaths, thus promising with improved maternal nutrition healthier babies with fewer physical handicaps. Greater attention to the nutrition of the pregnant woman should also result in lowered maternal morbidity and mortality, due to the better health of the mother during pregnancy and to the lessened incidence of complications, especially toxemia.

If the results of these studies warrant implications of such great public health importance, what can those of us who are especially interested in problems of public health do toward the accomplishment of these goals?

First of all, effective and practical education in the importance of nutrition during pregnancy and the ways in which the specific requirements for the nutritional essentials are to be met in the simple everyday diet of each case should be a routine part of prenatal care. In the long-range program the amount of nutrition education, both theoretical and practical, which the medical and nursing students receive should be increased. Nutrition should be introduced into the general educational program, so that the young married woman understands the increased nutritional demands of pregnancy and has already as the result of proper health education established normal food habits which have become a part of her daily life.

The best public health approach to the education of pregnant women in the importance of nutrition both to themselves and to their unborn infants, and the offering of practical advice on diet during pregnancy would be to include one or more suitably trained nutritionists among the personnel required to staff prenatal clinics. These nutritionists would coöperate with the clinic obstetricians to see that, unless there are real medical contraindications, the pregnant woman will be able to include in her diet the food necessary to meet her increased requirements, without undue gain in weight.

The time has come when there should be a clear realization by the obstetrician or general practitioner handling prenatal cases of his responsibility in regard to the diets of the pregnant women in his care. In private practice the obstetrician would add materially to the benefits of his prenatal care if such care included detailed practical dietary advice. He might handle in the routine prenatal visits those nutritional cases which presented no special dietary problems and refer his more difficult nutritional cases to a suitably trained nutritionist whose services were obtained on a consultation or special service basis. The general practitioner who wishes to offer practical dietary help to his prenatal cases would find the nutritionists employed by departments of health able to offer valuable practical nutritional assistance to his patients.

Bethell [13] says: "The prevalence of suboptimal nutrition, as measured by present standards and the degree of improvement after dietary instruction testify to the value of nutritional evaluation and therapy as a part of prenatal care for the population at large as well as for the distinctly underprivileged in large cities." Where outpatient food clinic facilities or other means of nutrition consultation are available, such services as a part of standard prenatal care could be provided at a cost which would seem a moderate price to pay for increased maternal and infant health and for lowering fetal and infant mortality rates.

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DISCUSSION

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I AM sorry that Dr. Kirkwood cannot be present to discuss this paper himself because he is far better fitted to do so from the obstetrical point of view than I am, and this is essentially an obstetrical problem. It is, however, of great interest to the pediatrician, the health officer, especially in connection with health education, and the nutritionist.

Dr. Kirkwood has read this paper and has asked me to emphasize the importance of certain points. I will, therefore, endeavor to make my discussion cover his thoughts as well as my own.

First let me emphasize what Mrs. Burke has pointed out that, although the accumulated evidence respecting the relationships between maternal nutrition and the condition of the infant at birth is very impressive, few and very guarded conclusions are justified as to the nature of these relationships. For example, the studies of Warkany and others on animals add weight to our findings in humans that a high incidence of congenital defects in infants is in some way associated with inadequate maternal diet. A close study of our cases, however, shows that in some at least genetic as well as other parental health factors were involved. It may be that a genetic factor, predisposing to anomalies in a given tissue or system, is present in many fertilized ova, but that whether or not defects actually develop is determined by the chemical constituents of the fluids constantly bathing the embryonic tissues. These chemical concentrations are most certainly influenced by the tissue stores and circulating levels of nutrients, and hence by the diet of the mother. They may also be influenced by digestive and metabolic disturbances or by other disease processes on the part of the mother or by placental abnormalities. It appears that any one of a number of nutrient substances may be involved. These are at present matters of speculation, and the practical public health worker who believes in keeping his feet on the ground will await the results of further investigations before drawing conclusions about them.

The significant and practical conclusion to be drawn from the studies described by Mrs. Burke is that a good diet during pregnancy is far more important to the health of the offspring than has previously been recognized. The old idea that the fetus is a true parasite certainly has to be modified, although the fetus probably is parasitic under most circumstances to a con-

siderable extent. It appears that the baby may suffer far more quickly and with less maternal disturbance than we had previously appreciated when the mother is undernourished. Since we cannot predict what the ill effects of any given deficiency will be, the objective is clear that we avoid all possible deficiencies.

Dr. Kirkwood has asked that I stress the point that preconceptional nutrition is also important and calls for consideration in public health planning. In a number of the cases in our series which turned out unfortunately from the standpoint of the infant, not only was the diet faulty during pregnancy, but it had been chronically poor prior to conception. It seems very probable that the results of nutritional difficulties or dietary defects early in pregnancy will depend in large measure upon the nutritional state of the mother when pregnancy begins. It may even be that advice as to diet given at the time prenatal care usually begins will in some instances prove to be ineffective, for most congenital defects have early embryonic origin. At least, the preconceptional diet should be carefully reviewed at the first prenatal visit, and the woman's nutritional state should be assessed. If evidence is found to suggest that she is underweight or otherwise malnourished or that her tissue stores of essential substances are depleted, her initial diet should be more than normally supplied with these in order to correct all deficiencies as quickly as possible.

Dr. Kirkwood feels that the finding in our series that the "superior-diet" mothers seemed to have more normal labors and deliveries than the inferior, as well as better offspring, should allay the fears of obstetricians as to the greater birth weight of the "superior-diet" babies. Although this was above previously accepted standards, labor was not more difficult nor were birth injuries increased. The idea of underfeeding a normal woman in order to produce a small baby and thereby to improve its prospects is certainly not justified. Underfeeding in respect to calories of an overweight woman may be highly desirable, but this must be carefully planned and supervised so as to assure that it does not lead to undernutrition in point of structural substances. The same principle applies to the control of the amount of weight gain by the normal woman. It appears that many women must strictly limit their use of carbohydrates and other foods of high caloric and low structural values if they are to avoid excessive gain and still take an adequate diet.

It seems to me that the problems before you as workers in the public health and educational fields are, first, how to improve the dietary habits and nutritional states of adolescent girls and of women of childbearing age, and second, how to insure that the preconceptional diet be changed promptly after pregnancy is recognized so as to meet the special needs of that period.

The first problem is largely one of general health education and I will not presume to make suggestions, but merely urge that it be considered a matter of great public health importance. The problem of diet during pregnancy is much more intimately related to medical problems and hence requires a good deal of individualization. I would like to stress that it is primarily the obstetrician's or physician's responsibility to see that dietary problems are satisfactorily dealt with. This suggests the need for more adequate education on this subject in the medical schools and in postgraduate medical education. However, this does not in any way minimize the importance of the part the nutritionist should play in all maternal care programs as well as in the education of the public in preparation for parenthood.

Births and the Newspapers

Safeguard Adopted by the New York State Department of Health Against Indiscriminate Publicity

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WHEN the birth registration system of this country was still in a formative stage there was little, if any, official opposition to the publication of names of children in newspapers. In fact, this practice was encouraged as a potential aid in securing better reporting. Now that parents are furnished with a certificate of birth registration, the argument in favor of newspaper publicity no longer holds. A review of the existing regulations shows that in some states a reporter may be given access to the original records; in others, there are restrictions of various degrees, the extreme being a statutory prohibition of communicating "to any person not authorized to receive the same any of the personal or statistical facts" entered on a certificate.* In Canada, I believe, neither provincial nor local officials furnish lists of births to newspapers.

The Public Health Law of New York State provides that a complete copy of a birth certificate may "be issued only upon order of a court of competent jurisdiction, or upon a specific request therefor by the person, if of age, or by a parent or other lawful representative of the person to whom the record of birth relates or by a department of a state or the federal government." A certification of birth, giving "only the name, sex, date of birth, and place of birth of the person to whom it relates and none of the other data on the certificate of birth" shall be issued upon request "unless . . . it does not appear to be necessary or required for a proper purpose" (Sections 389 and 391).

These provisions, which are effective in the state, outside of New York City, define the maximum of information which a local registrar of vital statistics may give to a newspaper. Since the birth certificate contains no reference to legitimacy and does not give the date of marriage, lists of births routinely compiled by local registrars undoubtedly include births out of wedlock or births which occur before the completion of the usual gestation period following marriage. Public announcement of such births would cause embarrassment and, as has happened, family tragedies. Therefore, a year ago the New York State Department of Health considered the advisability of instructing registrars not to furnish for publication any information contained in birth certificates. Before taking formal action, the department consulted representatives of the press and sought the advice of the Attorney General of the State. Charles J. Tobin, counsel of the New York State Publishers' Association, held that "the matter of a birth, death, or marriage is news and

* Maryland, Annotated Code, 1939, Article 43, Section 27.

the public is entitled to obtain such news from an authentic source and that such news should not be cut off from the press without explicit and certain language in the statute . . ." In less reserved language, Frank E. Gannett, owner of a chain of newspapers, considered the proposed regulation as an "outrageous invasion of the rights of freedom of the press" and that "the pretext that this . . . would hide the birth of illegitimate children is only a smoke screen for imposing on the press of this state a most objectionable restriction and interference with its public duties."

In a formal opinion, dated April 20, 1944, the Attorney General advised the department that such a regulation would be too broad. Here are some of the pertinent passages:

> The general principle to be deduced from the decisions bearing on the subject is that not all records kept by public authority are open, as of right, to the inspection of any member of the general public. In the absence of specific statutory provision or regulation authorized by law, an inspection of those which are not kept for the information of the public can be compelled only by one having a direct and tangible interest, distinct from that of the community at large.
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> It is quite apparent that vital statistics are not a record of the transaction of public business, nor does the statute give any indication that the individual and personal details required to be given are recorded for the information of the general public. Accordingly, it is to the statute that resort must be had to determine whether inspection is required to be allowed or refused, and to what extent it may be governed by regulation. Insofar as the matter is left to rules of the Commissioner or Public Health Council, their power is not limited as it would be in the case of documents which are "public records" in the strict sense.
>
> It rests with the (Public Health) Council to determine that disclosure of information which could be obtained in a certificate of birth may be made for any purpose which is not illegitimate. It cannot be said that routine publication as a matter of news interest in a newspaper . . . (is), as a matter of law, improper. Therefore, in my opinion a regulation such as you mention, absolutely prohibiting the furnishing of any information by a registrar for publication . . ., is so broad as to exceed the discretion otherwise possessed by the Health Council.

It was found impossible to formulate a regulation or an amendment to the law which would protect the categories of births mentioned earlier and at the same time permit the publication of other births. It was finally decided to leave the decision in each individual case to the judgment of the parents since, after all, it is their natural right to announce or to withhold such information from the general public. We hope the problem will be satisfactorily solved by means of a new item on the reverse of the birth certificate used in the State, outside of New York City:

NEWSPAPER ANNOUNCEMENT OF BIRTH

> The following question should be answered "yes" or "no" over signature of physician, midwife, or other attendant at birth: Are the parents willing that newspapers be furnished with a notice of this birth? .....
>
> (Signed) .....

The local registrars are being advised by the department that when the question is answered in the affirmative they are justified in furnishing to a newspaper the name and sex of the child, the names of the parents, and the date and place of birth.

The new procedure was heartily endorsed by representative obstetricians and social workers and, since there has been no negative comment on our public announcement, it may be assumed that it will be acceptable to the press.

A Program on Health Films*

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TOO many of our health films are poor, both technically and educationally, their distribution is inadequate, and the methods of their use leave much to be desired. The accomplishments of English documentary films, the enormous success of training films in the Armed Forces, the ways in which Canada has built up a vast audience for educational films, strangely enough, have had no effect on our health films.

After the war, a new and decisive situation is likely to develop. Mass production of projectors will greatly increase the number of film users; many film professionals will return from the services, looking for new fields of activity. These factors, together with the mounting concern for health problems, will offer excellent opportunities for health films. Yet, at the same time, the film industry anticipates important business possibilities in the educational field. Hollywood is preparing to enter it and commercial non-theatrical concerns will increase their activities in that field. Because of their large resources these production interests may gain control of the market. Will they always be able to base production on purely educational considerations? And, in particular, can Hollywood be expected to master the educational medium? Health workers must, therefore, organize their efforts, assume leadership, and furnish guidance if they want to see films truly serve educational needs.

What is urgently needed is a comprehensive program under educational leadership. A good instrument to carry out such a program would be a competent non-profit central agency for health films. Its essential function would be to bring health education and motion pictures together. It would serve as a center of information, study, and coördination, guide the creative forces in the field, and organize other necessary tasks. Its program should be dynamic. It might be advisable to keep it flexible as an operational unit so that it could freely coöperate or merge with similar projects which may spring up in other areas of the educational film. Since film problems in all subject matter areas are more or less alike, their solution might be achieved more effectively by a unified institution than by coexistent projects. In particular, it seems advisable for many practical reasons to combine an agency for health films with one for medical films.

The basic tasks in an integrated program may be outlined as follows:

INFORMATION ON HEALTH FILMS

Critical reports on health films should be made available to users. These would contain technical data, an objective description, an analysis of content, presentation and effectiveness, and suggestions for the use of the film. Such evaluations would facilitate film selection by workers in the field. Moreover, frank discussion will help health

* Condensation of paper presented before the Public Health Education Section of the American Public Health Association at the Seventy-third Annual Meeting in New York, N. Y., October 5, 1944.

workers to understand the film medium better and may guide film producers toward better production standards.

STUDY OF FILM EFFECTIVENESS

With so many differences of opinion existing as to the merits of films, there is need to observe their effects on audiences more closely. Tests and studies of audience responses, therefore, should form part of film evaluation. A better understanding of film effectiveness will also help in the planning of new productions.

STUDY OF FILM UTILIZATION

The proper use of films in teaching health needs consideration. Studies should be undertaken covering such problems as exhibition, the best techniques for teaching with films, and the integration of films with other methods and media of health education. The results of such general studies would be useful in preparing suggestions for the use of individual films, and could be incorporated into the evaluations mentioned above.

FILM PRODUCTION

The most important but also most involved task is to supplant the present trickle of weak films with a steadily flowing production program that is creative in its educational and cinematic efforts. To do this we must overcome the complex causes responsible for the inadequacies of our films.

Agencies responsible for the films seem not always to have a clear conception of the film medium. The entertainment film has become a monopolistic industry under rigid censorship, turning out a standardized mass product which is sterile and largely verbalized in form, the contents of which distort reality. It has offered few constructive stimuli to the non-theatrical film. This, in turn, developed a widely used style, the illustrated talk, in which the essential visual factor was relegated to second place. Health agencies, accustomed to verbal expression, readily adopted this style. Production of such films is easy, but also readily produces inferior films. Health film production has become an office affair, out of contact with the people. It is now largely a matter of writers and talkers; the visually creative element has hardly had a chance in health film production.

Furthermore, funds allocated for production have been insufficient. There has been little coördination and joint planning among health film producing agencies. Health agencies do not think and act in terms of a long-range, methodical production program. They limit themselves to single films at long intervals, sometimes amounting to many years. This circumstance also often leads to crowding of subject matter and to a futile attempt to satisfy too many types of audience with one film.

It is difficult to persuade film producing agencies to apply better production methods as long as an accepted and convincing pattern does not exist. The first step is the development of new methods of production planning. To know the subjects on which films are needed is not enough. What are the particular educational and age levels, living conditions and traditions of the groups to be taught? What, in each case, is the knowledge we want to convey; the attitude and actions we want to produce? How are we to determine whether the audience is willing and able to absorb the material we present? These are some of the questions that must be studied *with and in the field* in order to produce better and more useful films. And since so much of the subject matter of health is interrelated, we must learn to think in terms of integrated production programs on which to base the individual films.

Film needs should be studied. Such studies might proceed on two lines: as

part of a long-term program covering the entire field of health education, area by area, and as a short-term program to determine films in teaching areas where immediate and urgent educational needs exist. The practical objective of the studies would be to furnish preliminary film outlines containing specific information on the following points: (1) purpose, content, and treatment; (2) type and range of audience; (3) potential market; (4) estimate of production budget; (5) production plan, including suggested locations and consultants.

Such outlines for methodical production programs would be of great practical value to producing agencies and would furnish not only information on needed films but concrete suggestions for their production. They would make it easier to interest producers and sponsoring agencies. Incidentally, studies of this kind would offer excellent opportunities for film training of gifted people from both the film and health education fields.

Production financing is a serious problem. Today the health film market is undeveloped. Despite all the heavy demands for health films, most health agencies apparently have not enough funds to use films adequately. Many large agencies, as well as smaller ones, must get along with "free" films or donated prints, and with a fraction of the number of projectors they could use.

A post-war increase in projectors owned by health agencies alone will not suffice. What is necessary is the widening of the film market to the point where it can absorb many times the number of prints sold today. Public and private agencies must be induced to allocate far larger funds for this purpose. A big market will not only be a stimulus for production companies, but will also permit health agencies to meet educational film needs with the prospect of partial or even full recovery of their production expenses.

The consumers of health films should be organized. Although dissatisfied with the quality and scope of current films, educational agencies and institutions expend thousands of dollars annually for prints. They need health films and have to take what they can get. If these purchasers, large and small, could be organized, they would be heard and felt by producers and might become a powerful force.

Greater participation and closer coordination of health and educational agencies may be needed to solve the many-sided production problem. If individual agencies cannot secure sufficient production funds, there is no reason why groups of them could not pool their resources, and make better films on their common health problems. Health workers ought to realize that, because they are competent writers of health literature, they are not thereby qualified to design or write films. Health and film workers must collaborate in a spirit of mutual understanding from the very beginning of a production.

In addition to these basic tasks, there are others that could best be taken care of by a health film agency. Among them are:

1. Establishment of a clearinghouse service to list productions that are planned or under way and to make known existing film needs.
2. Assistance in the securing of funds for meritorious production projects; development of better methods of production financing.
3. Advice on the selection of film producers and production personnel best fitted for a given project; also on the selection of consultants on subject matter, health education, psychology and sociology.
4. Advice on all technical phases of production.
5. Developing the production of films on local health matters. Such films, so far mostly amateur-made, can be a valuable aid in community health propaganda. Their quality could be improved by expert guidance.

INTERNATIONAL WORK

American entertainment films are known throughout the world. For this reason other countries look to us also as a source of supply of health films and for general guidance. A central health film agency would play its part in developing international coöperation.

New York State Plans Blood Distribution Program

Edward S. Godfrey, Jr., M.D., Commissioner of Health of New York State, is supporting a bill carrying an appropriation of $100,000 before the New York State Legislature proposed by the New York State Health Preparedness Commission on a suggestion from the Medical Society of the State of New York. Dr. Godfrey points out that the present use of blood and its derivatives is confined to the larger urban centers, but that it obviously should be available even in remote areas of the state, particularly in view of the progress made as the result of war-accelerated research. He stated that the department's program would be of such a nature as not to conflict with the current program of the American Red Cross in obtaining plasma for military purposes.

Reporting on two years of study of the problem, the Department of Health points out:

1. That the current use of blood and blood derivatives in hospitals and medical practice in the state to date is only 60 per cent of that estimated to be the desirable use on the basis of current knowledge of the value of these products.

2. That more than 90 per cent of the hospitals in the state are not in a position to carry out adequate testing for blood types with regard to the Rh factor, largely because of the scarcity and cost of the so-called potent Rh typing serum.

3. That for the money now being spent in this field, the state could supply to communities all the blood and plasma needed, as well as a large variety of useful derivatives and special products, such as Rh typing serum and antipertusses serum which are not now available.

Army Water Supplies in Foreign Areas*

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IT is my purpose to discuss in some detail the U. S. Army water supplies at fixed installations in foreign theaters and commands or, as generally termed, "overseas"; and, to point out the high standards which have been applied to a satisfying degree of effectiveness in securing and furnishing safe and attractive water for our troops.

In many instances, important features of military strategy have dictated locations of bases, where the ability to select sources of water supply, adequate in quantity and generally acceptable as to character preliminary to purification, of necessity, has not been given the consideration which was possible in connection with the location of camps and stations in this country. Also, due to the semi-permanent character of many so-called fixed installations, the utilization of which would not be as lasting as corresponding semi-permanent installations in this country, it is understandable that permanent and costly structures, and expensive equipment were not warranted. Transportation has been the determining factor in some isolated locations, in regard to type of equipment employed. Nevertheless, taking advantage of the best that nature had to offer in the way of water sources in each area, and utilizing whatever material and equipment could be supplied, the Army's success in building overseas water supplies, adequate in quantity, and in providing purification measures to effect satisfactory quality, has been outstanding.

Information relating to the water supply installations at camps and bases in the various overseas theaters and commands has been made available to the Preventive Medicine Service, Office of the Surgeon General, Army Service Forces, through reports on sanitary surveys. These surveys, in most cases, were made by sanitary engineer officers of the Sanitary Corps who are on duty in the respective theaters and commands. In other cases, where sanitary engineers were not available, medical officers, in conjunction with Corps of Engineers officers, made the surveys. It will be understood, for security reasons, that only a general summary of the conditions encountered and what has been provided in the different parts of the world can be publicly released at this time. All details as to quantities and specific conditions at specific locations must necessarily be omitted from this account. It must be borne in mind also that this information is confined to the overseas fixed installations and does not refer to supplies for troops in the field—on the march, or in actual combat.

The survey report for each individual installation covered: the quantity consumed and the adequacy of the source to meet the requirements; a description of the source, including the type, general character and factors tending to cause contamination and measures of protection; a description of the puri-

* Presented before the Engineering Section of the American Public Health Association at the Seventy-third Annual Meeting in New York, N. Y., October 5, 1944.

fication and treatment facilities provided together with the quantities of chemicals used, including chlorine for disinfection; a description of the methods of distribution and storage, including further possible means of contamination, such as cross-connections, unprotected plumbing fixtures apt to permit backflow, and other objectionable features; and, supervision by the Medical Department, including inspection procedure and sampling schedules, laboratory facilities for examination of samples, and degree of coöperation with the Corps of Engineers operating personnel relative to recommended changes and correction of sanitary defects.

To a very large extent the Army has provided its own independent water supply for each overseas installation, including development of the source, construction and installation of purification and treatment devices, and methods and systems for storage and distribution. Where these new and independent installations are found, the reports have indicated that:

1. In a high percentage of the installations the quantity has been adequate.
2. The high standards of sanitary engineering practice, representative of American municipal practice and of Army installations in Continental United States, have been largely adhered to, in the matters of design, construction, and operation.
3. Equipment at most installations has been of American manufacture, of known dependability to perform the service required of it.
4. Purification and treatment methods have been effective in producing a drinking water supply of safe quality.
5. Proper storage and distribution facilities have enabled continuous service and adequate pressures to be maintained.
6. Means of possible contamination, such as cross-connections and defective plumbing layouts, have been noticeably absent.

Some installations, however, depend entirely on existing local municipal supplies, in the respective foreign areas, or to augment the separate Army supply, or as an emergency source of supply. Where installations have been entirely dependent upon the existing local supplies, we have found that only a few of them, in more populated areas, are adequate in quantity and satisfactory as to quality. In the majority of cases the following conditions pertain:

1. Adequacy of the supply, in regard to quantity has not been altogether satisfactory. Service has been interrupted frequently.
2. Purification and treatment measures have not been adequate. Haphazard or partial measures are not satisfactory; and much of the equipment or devices, being off-standard or outmoded, are not dependable.
3. Proper technical supervision and skilled control of operation are lacking.
4. Local plumbing installations allow cross-connections and back-siphonage conditions.
5. As a rule, where an existing local supply has been utilized, the Army has been compelled to consider it as raw water, and purify or treat it properly before serving it to the troops.

To summarize briefly the overseas water supply situation we find identical conditions existing in almost all parts of the world. In almost every theater we learn that the sources of water supply are deep wells, dug wells, springs, infiltration galleries, rivers, lakes, and impounded mountain streams. In some cases, and this is true somewhere in almost every theater, there are no sources of fresh water adequate to serve the requirements. Dug wells near the ocean, furnishing only brackish water, or the ocean itself may be all that is available. Distillation, obviously, is necessary.

While the surface supplies in many regions are grossly polluted as a result of human habitation on the watersheds —settlements of natives with indiscreet habits, or even villages with no modern sewerage systems—in other regions supplies from surface streams, particularly from mountainous sections where there is no human habitation, have never shown any evidence of contamination. Nevertheless, the Army takes no

chances in this respect in safeguarding the health of the troops, and treats all water supplies regardless of source.

Filtration is employed in many cases, ranging from somewhat elaborate installations at a few of the larger and more permanent bases, of gravity or pressure filters with the accompanying coagulation and sedimentation units, sometimes even preceded by aeration, to the Army mobile filter units and on down to the Army portable filter units. The last are most common. Chlorination is generally accomplished by means of mechanical hypochlorinators, the regular chlorinators for applying liquid chlorine being used in a comparatively few places.

In general, there has been no attempt to attain the refinements in water purification. Making the water safe to drink in most cases has been the chief objective. Fortunately, it appears from the reports, most of the raw water supplies have been chemically acceptable, fairly clear and palatable, although during rainy seasons the problem of heavy turbidity in many surface supplies is presented. At some of the larger bases purification processes include iron and carbon dioxide removal. At a few, particularly for some laundry supplies, softening devices are employed.

Deep wells are constructed according to good American practice, sealed and protected at the heads. Dependable deep well pumps of practically every recognized make have been installed.

Storage tanks are built of steel, concrete, or wood, and are protected against contamination.

Pipe lines and distribution systems are of cast iron, steel, transite, or wood stave pipe.

Operation by Corps of Engineers personnel has been of a high type. Some men with previous experience in operating water supply systems have been assigned to these jobs, and others have been specially trained by the Corps of Engineers for this most essential utility.

Supervision of the quality of the water supplies, being a responsibility of the Medical Department under Army Regulations, has been faithfully performed by Sanitary Corps sanitary engineers and Medical Corps medical inspectors. Generally, a medical inspector makes routine weekly inspections of the sanitary aspects of the supply, checking on all features of treatment, while enlisted personnel from either the Medical Department or the Corps of Engineers, or both, makes frequent tests for residual chlorine—at least daily and sometimes several times a day. Since there is not a Sanitary Corps sanitary engineer on permanent duty at every individual station or base, the extent of his activity at each may be limited to periodic visits from headquarters of the theater or command, to make a detailed sanitary survey, advise and otherwise render special technical service.

Defects are generally corrected and improvements in operation are made, as far as facilities will permit, locally and immediately, upon recommendation of the Medical Department, without having to take the matters up through higher echelons. At this point it is gratifying to note that the reports from the overseas areas attest to an excellent relationship existing between the Medical Department and the Corps of Engineers, in the matter of furnishing good water—close liaison and splendid coöperation.

In regard to bacteriological examination of the supplies, the frequency depends upon availability of laboratories and transportation. Station and general hospitals are equipped with laboratories and personnel to make these examinations. Some samples have to be transported by air for many miles, while others are examined

locally. Taking into account both the importance of frequent examinations in relation to the existence of sanitary hazards, and the availability of laboratories, the sampling and examination schedules may be several times a week, weekly, bi-weekly, or monthly. Where they are infrequent, confidence in safe quality in the meantime hinges on maintaining a minimum residual chlorine content of 0.4 p.p.m. or more after a contact period of at least 30 minutes, in all active parts of the distribution system. (The reports indicate that this requirement is being strictly carried out at the great majority of installations at all times, anyway.) It is most pleasing to note that the bacteriological examinations, performed and reported according to accepted standards, show the treated water supplies to be safe for drinking.

It is not my purpose to paint a beautiful picture of the Army water supplies all over the world. There have been plenty of difficulties and obstacles to overcome in the matter of securing adequate sources and furnishing water of safe quality. There have been plenty of problems relating to construction and operation, some of which have never been satisfactorily eliminated due to lack of proper equipment or the uncertainty of continued maintenance of the base. There are places where those in charge, upon reading the preceding account, might say that all of this does not apply to their situation, or that we have overlooked their reports. Naturally, at the first establishment of a new camp or base there are some rather crude facilities. Water supplies from sources, good and bad, have had to be hauled by tank truck or trailer and chlorinated in Lyster bags or boiled before drinking. The writer has personally experienced some of these conditions at isolated stations during the construction period. To a large extent most of the early problems were overcome as construction progressed, and as the stations or bases were completed for full operation. In some small isolated stations, however, and even in some large camps which are considered as temporary, the drinking water supply still can only be furnished by the process of hauling and Lyster bag treatment.

It may be of interest to point out a few conditions and features relating to water supply which are peculiar to the various sections in which the Army has maintained fixed installations. In the South Atlantic, deep well supplies have exceedingly high iron and carbon dioxide contents, but these are effectively removed by the standard processes of aeration, lime treatment, and filtration at properly constructed plants. The deep well supplies approach inadequacy, however, during dry seasons and must be augmented in some cases by municipal supplies from surface sources, which are not too reliable in regard to quality.

On one island in the South Atlantic the only fresh water available is the small quantity caught during rainfalls. This, of course, is not adequate; therefore, large distillation units are provided for converting ocean water into fresh water.

This same distillation procedure is used to produce the drinking water supply from the brackish water in shallow wells in certain parts of Africa, while the raw water is used for washing purposes. In other places, in Northern and Central Africa, such brackish water from shallow wells being the only available local supply, it is used for all other purposes except drinking, while drinking water must be hauled from fresh water wells some distance away. Deep artesian wells in a desert oasis produce an abundant supply for installations in that vicinity. There are some surface supplies derived from rivers which must be filtered and chlorinated. Where sup-

plies have to be hauled to camps and bases, the drinking water is always chlorinated at the point of consumption, regardless of previous treatment.

In Iran, mountain water drawn through tunnels, and deep wells produce adequate supplies. The surface supply, where used, is subject to a high degree of treatment at well constructed filter plants.

Fresh water in the South Pacific Islands is obtained chiefly from springs, rivers fed by springs, and shallow wells. These are chiefly in coral formations, which being extremely porous seem to contain a great amount of water, forming springs which feed the rivers. A typical island river is about 20 ft. wide by 2 to 3 feet deep. Some river bottoms reveal a coral bed, others a sandy one. Dug wells and developed springs are protected with concrete curbs and covers, or casings made from oil drums with cemented joints. The water is generally clear, colorless, and very palatable. Contamination of the ground water in this type of formation is extremely likely, making waste disposal a greater problem at many locations. Portable filters are commonly used in conjunction with chlorine, but at many places the supply is only chlorinated. There are quite a number of drilled wells to deeper sources, and in the mountainous section clear water from uninhabited areas is obtained from the mountain streams. As in certain parts of Africa, at a few places the supply from dug wells is brackish and must be distilled for drinking purposes, while the untreated water is used for bathing. Similarly, sea water is used at other locations in this area. Individuals collect rain water for laundry purposes.

In the Alaskan area, abundant supplies are derived from glacial streams and wells, sometimes from lakes. These supplies generally are clear and require only chlorination. When the shallow streams freeze up in the winter, the wells form the principal sources. In the Aleutians, surface reservoirs are formed by building log and earth dams in the ravines in the hills. This generally produces adequate and continuous supplies of clear water from uninhabited watersheds and they are treated only with chlorine. At one location in the Aleutians sea water is distilled.

Along the Alaska Highway in the Northwest, where the writer had several months' experience, supplies are obtained principally from surface sources —rivers and lakes—although there are quite a number of deep wells also. The well supplies have not been altogether satisfactory, due to high mineral content, and sometimes are unreliable as to production; consequently, long pipe lines have had to be laid at some places to bring water from rivers and lakes. A lake supply generally is clear, soft, and otherwise attractive. The rivers during the spring thaw are laden with glacial silt causing heavy turbidities and requiring coagulation and filtration, but the water taken from under the surface ice formation in the winter is clear. There seldom is found any contaminating agent along the surface supplies back from settlements, camps, or bases.

A problem demanding consideration relative to securing and distributing water supplies in the northwestern part of this continent is the extremely low temperatures in the winter and consequent freezing. As previously indicated, river and lake intakes are placed below the maximum recorded ice thickness which may be 5 to 7 ft. South of the permafrost area, main pipe lines laid with 8 ft. of cover are generally amply protected. Smaller pipes, forming the distribution system at a camp or base, may be laid shallower if properly insulated or laid parallel to steam lines in a wood box conduit or wrapped in tar paper. The steam lines are of

course insulated but enough heat escapes to keep the water pipes from freezing. In the far north where permafrost conditions prevail, main water lines are laid on the surface of the ground, enclosed in insulated boxes filled with sawdust or shavings and wrapped with tar paper. Steam is sometimes used at intake pumping stations to keep the intake pipes clear of slush ice. Sometimes steam is injected into the intake well to raise the temperature of the water several degrees. This is termed pre-heating. Under continuous pumping and circulation the water in the pipe line will not drop to the freezing point. Small storage tanks normally are installed in closed heated buildings. Deep wells in the far North which are drilled through the permafrost must be operated almost continuously in the winter to avoid freezing.

Unlike many other services for the Army, only the equipment and devices for drawing and purifying water supplies could be manufactured at home. The raw product had to be obtained from whatever was available locally. In many cases there have not been numerous problems, while at others the difficulties have been tremendous. On the whole, the Army has done a good job in supplying our troops with adequate and safe water supplies.

Government of Colombia Purchases Health Exhibit

Dr. Bruno Gebhard, Director of the Cleveland Health Museum, Cleveland, Ohio, has announced that the Government of Colombia has ordered duplicates of 73 units in the Museum to be used in a traveling health exhibit in Colombia.

The items ordered will occupy 2,500 square feet of space and will include exhibits on preventive dentistry, tuberculosis, conservation of hearing and of eyesight, the general biology of the human body, and on food for health.

Lessons Learned from the Internal Security Program of the War Department*

LT. COL. W. H. WEIR, SN.C.

Office of The Provost Marshal General, War Department, Washington, D. C.

THE Internal Security Program of the War Department has as its objective the protection of facilities and operating personnel essential to the production of war material for the fighting fronts. The supervision of this program is a responsibility of The Provost Marshal General. The accomplishment of this objective requires closely coordinated activities of many branches of the armed services, civilian agencies of the federal government, state and local agencies, and the management of privately owned manufacturing plants and related facilities.

The uninterrupted production of the materials of warfare requires the methodical application of protective measures calculated to be proper and adequate under the imposed restrictions of man power and material available for this purpose. When the nation mobilized and converted its production resources from the arts of peace to the necessities of war, the Internal Security Program of the War Department was put into operation. This military activity has kept pace with the steady growth of the huge material production program. It has undergone such modifications as were required to meet the necessities of the strategic situation as this has changed during the several years of war. The Internal Security Program of the War Department reaches deeply into both the military and civilian components of the nation. It has adopted many of the time proven methods of protection and safeguarding to the military situation and introduced special methods where necessary to provide an efficient and flexible internal security pattern.

The particular elements of the Internal Security Program of the War Department of direct professional and technical interest to this Association are those relating to the protection of the health of essential personnel engaged in war material production. In the rush of creating a war material production industry involving the rapid conversion and expansion of many manufacturing plants and the construction of many entirely new ones, it was inevitable that gaps in the public health environmental safeguards would occur. In a great many cases of new war plants and major expansions or modifications to existing ones, the review and approval of those features of construction plans involving public health protective items could not be accomplished by local regulatory agencies. Inspection during

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construction was reduced to a minimum because of the tremendous additional work load on public health departments coincident with unprecedented reduction in their technical staff personnel. The ultimate usage of and production demands on manufacturing facilities could not be predicted precisely. These and many other restrictions and limitations well known to inspection and enforcement officials combined to produce a general situation incompatible with recognized standards of public health protection. After the production lines were provided the continued manning of them by safeguarding the health of personnel became an important element of the same Internal Security Program that provides protection for the physical plant and equipment.

The protection of the quality of the water supply in the group of privately owned manufacturing facilities most vital to the war effort was added to the Internal Security Program of the War Department in the early part of 1943. A limited number of Sanitary Corps officers was made available for duty with the Security and Intelligence Divisions (then Internal Security Divisions) of the nine Service Commands into which the continental United States is divided. The technical officer personnel assigned to this program was kept to a minimum in conformity with restrictions on duty assignments of Sanitary Corps officers within the United States. This originally small number of officers assigned to this duty in the service commands now has been reduced to less than half of what it was in 1943. With the large number of manufacturing facilities receiving internal security inspections and the small number of Sanitary Corps officers assigned to this special duty, a program was developed which involved generally the following:

1. Teaching of internal security inspectors to secure basic data with reference to the various sources, major uses, treatment and distribution of water at manufacturing plants, and other facilities receiving internal security inspections.

2. Review of these basic water data by the Sanitary Corps officers on duty in the Security and Intelligence Divisions of the Service Command headquarters to ascertain actual or suspicious hazardous water supply conditions involving cross-connections between potable and non-potable systems, contaminated private plant water supply sources, potable water connections with toxic process solutions, and potentially dangerous special cases.

3. Inspection of the revealed actual or suspected cases of intermingled potable and non-potable water systems by the Sanitary Corps officers.

4. On-the-spot explanation to plant operating officials of the methods indicated to correct dangerous conditions found through the sanitary engineering inspections.

5. Preparation of water safety reports and recommendations to plant management for correction of hazardous conditions after correlation with other internal security recommendations, particularly fire prevention and continuity of process water.

6. Coördination of the program generally, and wherever possible specifically in each case, with state and local health departments and other agencies interested in water safety.

The inspection and correction program on water supply quality protection which has been carried out in the group of war production plants receiving internal security protection has produced results consistent with those anticipated when it was initiated. One of the fundamental principles upon which the water security program was developed and carried out is mutual coöperation with state and local health departments and other interested agencies. Officers with public health background were selected to operate the program. Every effort was made to conform to the regulations of various states although there is the widest divergence of laws, regulations, and practices throughout the country. The degree of vigilance and control through inspection and enforcement normally maintained varies from those

states and municipalities supporting a realistic and effective program to those which defend the existence of known or unknown hazards by carrying on the books prohibitory rules and regulations with little if any attempt at correction.

A large number of the state and local departments have provided every possible assistance to the representatives of the War Department in carrying out this nation-wide military objective which by its nature was related directly to the civilian population. By working agreements and frequent contacts between representatives of the War Department and the inspection agencies of states and municipalities highly productive programs in certain geographical areas have been developed on a mutual aid basis. Duplication of inspection effort was avoided and a high degree of compliance with the letter and intent of local regulations was secured. Inspection by local agencies was possible only where normal inspection staffs were not depleted or where reduced building activities released qualified inspectors for a directed effort in plants engaged in war production.

There is a growing realization that in the past the major public health supervisory attention to and control of water quality for drinking purposes has been directed to purification at the source of public water systems. While a satisfactory degree of purification generally was being attained at the point of production the adverse effects on quality of the manner of subsequent handling and distribution frequently were unrecognized and uncontrolled. The dispersion of points of danger and the time required for and the complexities of inspection and correction are large factors influencing this situation.

The necessity for the War Department to take cognizance of the dangers of contamination of water supply in vital war material production plants and related facilities for the protection of essential workers in time of war again draws attention to this field of public health engineering. The problem of protecting industrial employees against water-borne diseases due to improper sources, purification, storage, and manner of distribution for ultimate usage is a continuing one whether in war or peace.

Observations and experiences in the operation of a corrective water safety program which reached into almost every state and included many types of industrial properties serve to point up problems to which public health officials will again turn renewed attention when normal control programs are reestablished. The basic problems and their solutions are not new although the variations in situations are almost limitless. New variations will appear as mechanization of industrial plants changes with new post-war products and processes. Increased demands for large volumes of water for multiple purposes are to be expected. Reconversion of war plants to post-war production will bring about interior water system modifications with tendencies to interconnect, cross-connect and otherwise set up conditions for the intermingling of potable and non-potable waters within industrial properties.

With the experiences of the past as a background and the changing industrial program appearing in the not too distant future, it is probable that some state and local inspection and control agencies may reëxamine their policies and practices in regard to the safety features of water supply within industrial properties. The reëxamination of such programs may take into consideration certain new objectives and the more complete accomplishment of those now included in control efforts. Brief mention will be made of some objectives which public health engineering planning for long range effect undoubtedly will take into account in so far as

they are not now included in state or local control procedures.

Control of the sanitary features of industrial drinking water supplies at the source should be extended. There are many water systems owned and operated within industrial properties which are independent of public systems. As such they may receive only casual attention by control agencies in contrast to the attention given public systems. Wherever possible these installations should be included in normal routine inspection and control programs of drinking water supply. They have all of the physical characteristics of public systems and serve directly a considerable part of the population using a common distributed water supply. The general upgrading of this class of water supplies where needed can be effected by applying the same procedures which have brought public water systems to a generally high state of public health safety. Inclusion of industrial drinking water sources in the regular program of sanitary inspection, laboratory examination of samples, corrective recommendations, and instruction of managing and operating personnel in correct water supply practices is indicated.

The drinking water distribution systems within industrial properties supplied either from public systems or from independent sources should receive the necessary inspection to determine and eliminate cross-connections and interconnections with systems carrying non-potable water maintained for fire protection, manufacturing processes, and other purposes. The continuous search for practical means of minimizing the dangerous potentialities of unavoidable cross-connections is receiving stimulation in the development of additional equipment specifically designed to accomplish a higher degree of public health protection. On the question of the use of mechanical devices to effect separation of drinking water systems from sources of contamination there exists a considerable difference of opinion in formulating and administering the regulations of various state and local water control agencies. Within this range of administrative opinion there usually exists an engineering solution.

There is no question that the complete physical separation of drinking water systems from other systems is the ideal condition and should be accomplished wherever possible. However, the practical situation is sometimes such as not to be adaptable to complete physical separation. A realistic engineering approach in such cases should include a careful consideration of the use of mechanical equipment under the specific conditions existing. If the prevention of the intermingling of potable and non-potable water is to be by permissible mechanical equipment, a system of thorough and regular inspection should be established and maintained at point of installation. Such point of separation of water should be considered an object of continuing sanitary engineering inspection similar to mechanical equipment constituting essential units of purification processes.

The sanitary engineering review by state health departments of industrial plant construction plans for new projects goes far toward eliminating many dangerous water supply installations which are not recognized by industrial architects and engineers. Early consultation with operating management, at which time the primary responsibility of the industry for providing health and safety protection in its installations and operations can be explained clearly, is a good investment of time for mutually profitable permanent relations and accomplishments.

Industry by means of alerted managing and operating officials can do much to correct and maintain a clean

bill of health, thereby eventually reducing materially the supervision load of public health departments. It may be surprising to the uninitiated, but it is well known to those having worked in this field, that many otherwise well informed industrial plant officials lack a full understanding of some of the most elementary principles of water supply safety. This is due probably to the general safety which has been built into the public water supplies of the United States and upon which all consumers rely without question. As the sustained sanitary supervision of public water supplies has pushed the danger of water-borne disease from such systems to a very low point, there has been a significant reverse tendency by large consumers of water to feel that short-cuts could be taken in providing cheaper water. The result has been that the managers of many plants and other properties allowed a false sense of security to lead them into falling victims to dangerous private water supply installations or the careless utilization of water systems in relation to manufacturing processes. The attention to water safety practice within industry needs to be moved up to the "front office" from its all too usual location in some corner near the back gate.

While this water supply protection activity within and related to industrial facilities vital to the war effort is prosecuted, like all other parts of the Internal Security Program of the War Department, as a wartime measure, it is believed that permanent benefits have accrued. Industrial management does not desire to maintain hazardous conditions to which employees are subjected. The dangers of water contamination are not obvious to the layman in this field. It is the obligation of those charged with the continuous public health protection responsibility to reëstablish as soon as possible an aggressive program of inspection and correction of sources of danger or sanitary deficiencies. Familiarity by the control agency with the relation of water to the manufacturing and operating processes of the plant is essential. This permits a convincing discussion of corrective measures. It assures management that the solution offered is practical and to the best interests of the operation of the business. The establishment with industrial officials of a cordial and coöperative relationship is of primary importance. This does not indicate a vacillating policy on the part of the public health control agency, but goes a long way toward accomplishing a realistic and effective program of firmness based on sound public health engineering decisions.

Application of the Phosphatase Test to Cheese*

1. A Preliminary Report on Cheddar Type Cheese

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WITH the increase of pasteurization of milk for cheese making, and the possibility of the enactment of legislation † requiring that cheese be either adequately ripened, pasteurized or made from pasteurized milk, a re-evaluation of the phosphatase test in its application to cheese seems desirable.

The phosphatase technic previously described,[1] while suitable for differentiating between cheese made from raw milk and cheese made from pasteurized milk, did not stress the importance of achieving optimum pH conditions, nor did it take into consideration the wide range of acidity present in the many different types of cheese available, nor the complex changes which occur in cheese casein through the aging process, nor the variant amounts of fat present in different types of cheese.

The method of preparing the cheese sample for testing purposes is very important. It was recently ascertained that if the finely divided cheese sample be ground in a mortar with water almost saturated with n-butyl alcohol, the colloidal suspension of fat and protein was thoroughly broken up, allowing the phosphatase enzyme if present to be extracted by the water almost quantitatively.

The two testing procedures previously recommended,[2] with slight modifications necessary to produce optimum pH conditions, are equally applicable when the sample is prepared as follows:

Grind 5 gm. of finely divided cheese free from mold with 20 ml. of a solution of 7.5 ml. of neutralized normal butyl alcohol in 100 ml. of water. The butyl alcohol solution should be added in successive 5 ml. portions. Pour the mixture into a test tube, shake vigorously, and allow to stand for about 30 minutes or until the fat has collected at the top while the protein settles on the bottom. For testing purposes, the sample is withdrawn from the relatively clear middle portion, being careful to avoid any inclusion of fat.

If the so-called field test is used,[2] a ½ ml. portion of the prepared sample is added directly to 5 ml. of the buffered substrate and then thoroughly mixed. A few drops are withdrawn, tested with thymolphthalein indicator solution on a spot plate. If a blue color is not obtained, the pH of the substrate-sample combination is adjusted by the addition of successive small amounts of any of the recommended buffers at pH

* Presented before the Laboratory Section of the American Public Health Association at the Seventy-third Annual Meeting in New York, N. Y., October 5, 1944.

† The following have enacted legislation of this nature:
California
New York City
New York State
New Jersey
Province of Alberta, Canada

9.6 (a special crystalline buffer is now available) until the thiefed portion gives a blue reaction with the thymolphthalein indicator, thus assuring proper pH conditions. The mixture is then incubated for 20 to 30 minutes, six drops of the BQC solution are added, the mixture is immediately shaken and then allowed to stand for 5 to 10 minutes to permit the indophenol development. Unless the indophenol blue color is readily apparent, the n-butyl alcohol extraction must be utilized before the sample may be classed as phosphatase-negative because of the masking effect of side reactions.

Using the above method it was found possible to detect cheese made from phosphatase-negative milk to which was added as little as 0.25 per cent raw milk, or cheese made from milk which tested two units, i.e., very slightly underpasteurized. Cheese made from phosphatase-negative milk remained negative. There is no question of the ability of the test to detect cheese made from raw milk or improperly pasteurized milk. It should be borne in mind that since any phosphatase originally present in the milk is largely concentrated in the cheese, it is quite possible for a so-called "phosphatase-negative" milk (that is, a milk having less than 1 unit) to yield a cheese which will give a slight positive on the test. It is therefore suggested that *at this time* only those cheese samples yielding 5 phosphatase units or more be considered improperly pasteurized.

The laboratory technic may also be used making the same pH adjustment to thymophthalein if required. After incubation for one hour, the sample is clarified by using the minimum amount of a 4 per cent copper sulfate, zinc acetate, or lead acetate solution necessary to produce a break in the precipitation of the protein. To 5 ml. of the filtrate is added ½ ml. of the buffer and two or three drops of the BQC reagent. If copper sulfate is used, the indophenol develops much more quickly than when zinc acetate is used, but has the disadvantage that the filtrate itself is slightly colored.

When zinc acetate is utilized, the indophenol is frequently masked by grays. In either instance, any questionable result may be resolved by extracting with 2 ml. of neutralized n-butyl alcohol and comparing the extracted indophenol with a known negative result.

Regardless of which of the procedures is utilized, a "blank" determination should be made on the sample by (a) either heating a portion of the sample to above 170° F. for one minute and incubating a part with the buffered-substrate, or (b) incubating a portion of the unheated sample with buffer in the absence of the substrate (disodium phenyl phosphate). In (a), any phosphatase originally present in the sample is destroyed, so that any indophenol blue resulting from the test may be attributed to a residual phenol, while in (b), although the enzyme if originally present is still present, there is no substrate to support enzyme hydrolysis, consequently, the appearance of an indophenol blue color may similarly be attributed to a residual phenol or some other interference.

Where laboratory facilities are not available for the preparation of the cheese sample, it has been found expedient to place a small quantity, approximately ¼ to ½ gm. of finely divided cheese directly into 5 ml. of the buffered-substrate, shaking thoroughly in order to effect as complete a dispersion or solution as possible, making the pH adjustment to thymolphthalein, and then incubating the mixture for at least 30 minutes. While this technic does not yield the sensitivity encountered when the sample is properly prepared, it will serve most field inspection purposes.

Attention is further directed to previously recommended precautions [3, 4] regarding false positives and the necessity of using freshly prepared reagents. Our recent work has indicated that yeast and some molds (a culture of *Oidium lactis* and *Penicillium notatum*) which grow on cheese under certain conditions will produce appreciable amounts of phosphatase, but that if the mold growth is removed before the cheese sample is prepared for testing purpose, no difficulty or false positive is encountered.

No attempt should be made to match exactly the extracted indophenol blue resulting from a cheese assay with the published color standards developed for milk phosphatase assay. The higher amount of fat present in cheese, when extracted by the neutralized normal butyl alcohol adds yellow to the indophenol blue producing greens. The comparison should be made as to whether the test solutions contain more or less of the blue component than the standards or the "blank" test.

NOTE: The comments in this article refer to cheddar type cheese but not to "process" cheese, i.e., cheese which is reground and then "pasteurized." This latter type cheese presents unique problems which will be elaborated in a subsequent article.

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3. Scharer, H. Further Observations on the Rapid Phosphatase Test. *A.J.P.H.*, 30, 10:1206 (Oct.), 1940.
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Health Education Workshop

A Health Education Workshop to be held from July 2 to July 20, dealing with both personal and community health, will be a feature of the 1945 Main Summer Session at The Pennsylvania State College. This Workshop will be conducted under the auspices of the Summer Sessions with the Pennsylvania Department of Health and the Pennsylvania Department of Public Instruction coöperating. The resident staff will be augmented by nationally known leaders from federal and state as well as from private agencies. Further information may be obtained from the Director of Summer Sessions, The Pennsylvania College, State College, Pa.

Factors in Army Water Quality Control*

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ONE of the important objectives of the preventive medicine program of the Army is to safeguard the quality of all water used by the Army. This program applies alike to fixed installations in this country and overseas, and to troops in the field. The purpose is to provide a safe water all of the time, irrespective of location or hazards to be met, and a palatable and attractive water whenever possible. To accomplish this, in fixed plants, the entire installation must be designed and constructed with due regard to the many factors that may affect the quality of the water, and the treatment plant must be operated skillfully. Field purification equipment must be capable of removing or destroying all disease-bearing organisms. Soldiers who cannot be provided otherwise with safe water must have a simple, reliable, and unobjectionable method of individual water purification. Thus, the water quality control program reaches into all echelons of the Army and to all parts of the world. However, for reasons of security and brevity this paper will be limited primarily to the control of water quality in fixed installations.

An early step in the control of Army water supplies was the adoption of what may be termed state sanitary engineering standards. Over the years there has been built up a largely uncodified system of policies and standards that represents, when effectively applied, a safe practice. To apply them effectively, it was necessary to staff many key positions with engineers familiar with state methods. Fortunately some engineers with state sanitary engineering training were available in the Sanitary Corps Reserve, and others were commissioned from civil life early in 1942. These men were assigned, so far as possible, to key positions, including my own office; Service Command Headquarters, either as Service Command sanitary engineers or as assistants; overseas theaters; and important camps.

To implement the adoption of these general policies and standards, four specific steps were taken which have been principally responsible for the high quality of the water supplied to the Army. These steps were: *a* The adoption of sound design standards for all new construction including extensions and enlargements; *b* a careful examination of all existing plants for sanitary defects and the immediate application of corrective measures; *c* the adoption and enforcement of a sound and effective policy in regard to chlorination; and *d* a coöperative program with the Corps of Engineers leading toward better operation. To these may be added a comprehensive sampling and

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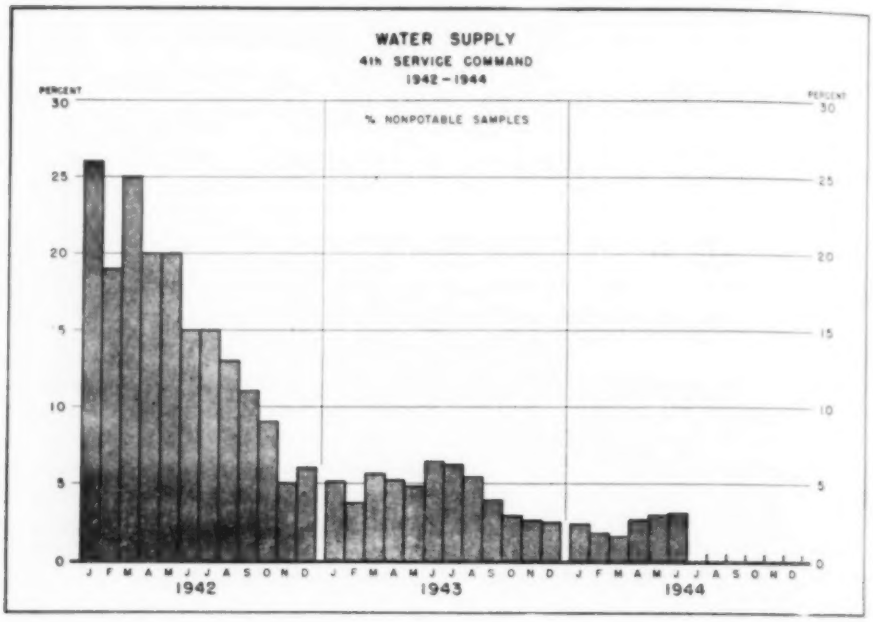
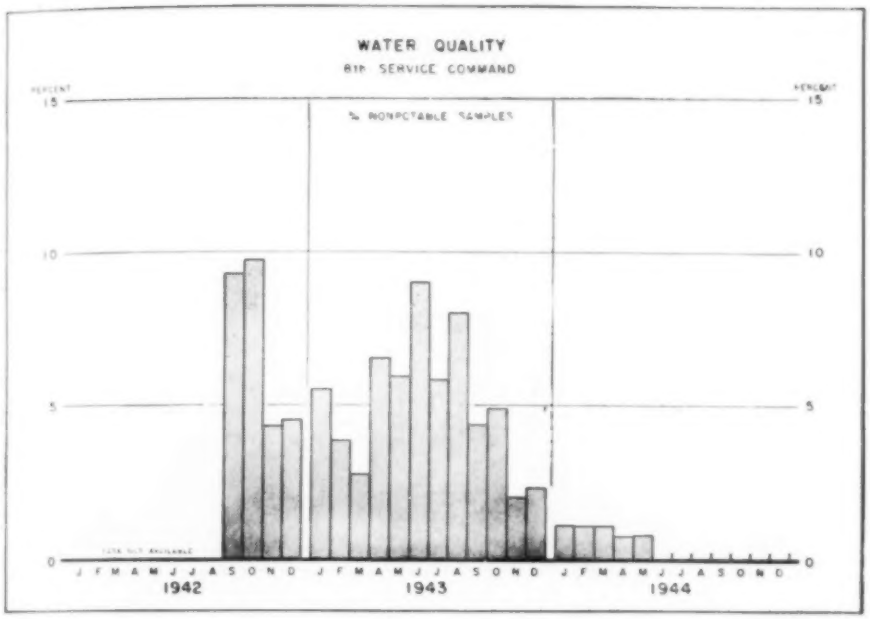


testing program. In the Fourth Service Command alone, more than 6,000 samples are analyzed each month. For the most part, this also is a joint program of the Corps of Engineers and the Medical Department.

Standards of Design—At the beginning of the emergency, the Army had given no special consideration to those factors in design that might affect health. Fortunately most of the plants built before and during 1941 were designed by recognized consulting engineers and were generally satisfactory, though numerous sanitary defects resulted from hasty and sometimes careless construction. However, when the Corps of Engineers took over the construction activities formerly carried on by the Quartermaster General, the design standards recommended by our Division of Sanitary Engineering were incorporated into the *Engineering Manual*, which thereafter governed all design and construction. The recommended design factors included: Quantity to be provided; source; distribution system capacity; location of water lines in respect to sewer lines; disinfection of water mains, wells, and storage facilities; regulations in regard to dual systems; the quantity of storage; design factors in treatment plants; provision of chlorination facilities; pumps, standby power and pumping stations; and laboratory equipment.

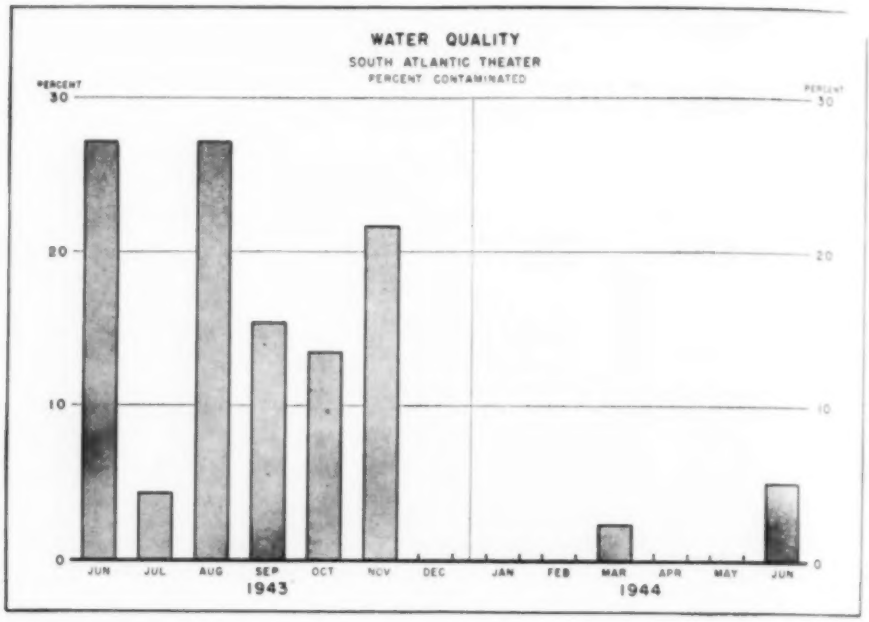
Sanitary Surveys—In order to locate sanitary defects in existing plants before any epidemic of disease should occur, and also to determine as a guide for future policy what types of defects were being built into Army plants, a sanitary survey of all Army water supplies was initiated in August, 1941. Points covered in this survey included population served; total and per capita consumption; a full report on sources of supply; a detailed description of the treatment plant, including size, design capacity, and operation rate of each unit; chemicals used; point of application of chlorine; chlorine residuals;


WATER QUALITY
8TH SERVICE COMMAND
% NONPOTABLE SAMPLES
15
10
5
0
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1942
1943
1944

tests of raw and treated water; a description of the distribution system; pressures; storage capacity; cross-connections with other sources, with other distributing systems, with unprotected plumbing systems, and with other devices, as sewage pumps; other conditions that might permit contamination; laboratory facilities; operating personnel; and samples of daily reports. When water was purchased, the survey covered the municipal or other plant supplying the water. As a result of this survey, many defects were located. With the coöperation of the Corps of Engineers, immediate steps for correction were taken. So far as possible, the services of experienced public health engineers of the Sanitary Corps were utilized for the surveys. This survey is on a periodic basis and plants are resurveyed at 6 to 12 month intervals, by Sanitary Corps engineers working under the direction of the respective Service Commands.

Chlorination—A policy of chlorinating all water supplied to the Army was adopted in 1942, and to give effect to the policy a residual of 0.4 p.p.m. was prescribed for the commonly used parts of the system. When chloramines are used, the required residual is 0.6 p.p.m., and in both cases a reasonable contact period is specified. The purpose of this requirement was to provide a margin of safety against recontamination. This was deemed necessary because of general wartime conditions; the fact that piping was often not properly cleaned nor joint material sterilized before use; the necessity for frequent cuts into pipe lines for repairs, extensions and additional service connections; and in some camps the occasional or frequent existence of negative pressures due to either lack of water or of main capacity.

There was relatively small reaction against this requirement on the part of the Army, and nearly all of the reaction that did occur was anticipatory. In a few places, it was necessary to use



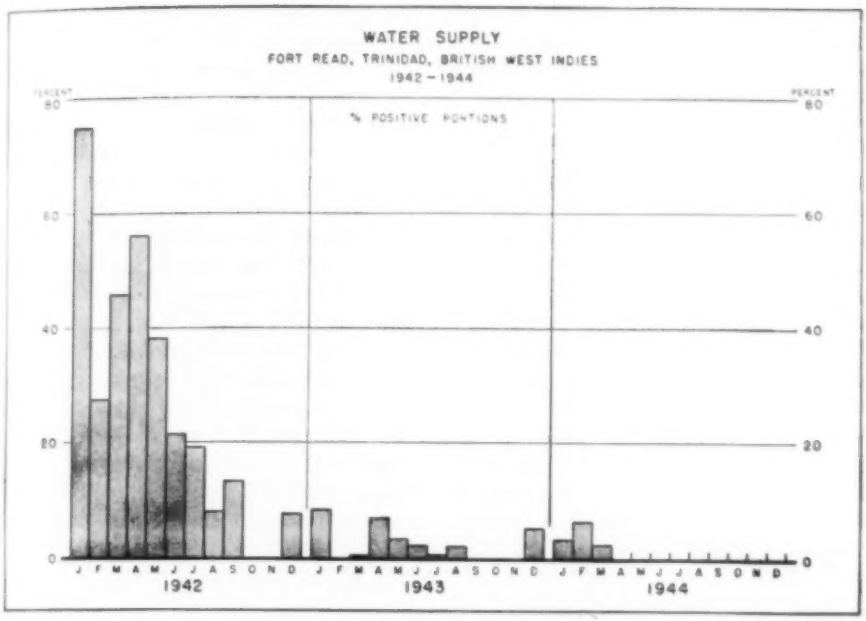
break-point chlorination, and treatment for iron and sulfur removal was required in some camps. Generally speaking, those water supplies that required such special treatment had not previously been getting effective chlorination. In the past 18 months, there have been very few complaints of chlorinous tastes, either from the Army, or from those people outside the Army who were in the beginning most outspoken in criticism of the Army's policy.

It is my opinion that the requirement for a reasonably high chlorine residual has been one of the most important factors in insuring for the Army a consistently safe water. In addition to providing a distinct factor of safety, it makes the Army water-quality-conscious through the requirement for daily or more frequent chlorine residual tests. The cost of the program was and is trifling compared to the cost of the illness that might have occurred without it.

In all of this work the Corps of Engineers, and especially the Repairs and Utility Branch, coöperated most cordially and closely. When it is realized that water supply in the Army is a joint responsibility of the two services —the Corps of Engineers for design, construction, and operation, and the Medical Department for all factors that affect health—the necessity for a close and understanding partnership is clear. Nowhere has this been more marked than in the operation of Army water plants. Regardless of scarcity of personnel, low rates of pay, and other handicaps, the Repairs and Utility Branch has maintained a very high standard of operation. The Medical Department has been glad to help whenever and however possible, as by supplying instructors at operators' training schools, and loaning, when necessary, sanitary engineers to assist in solving unusual problems or to help temporarily in operation.

FIELD WATER SUPPLIES

Field Purification Equipment and


WATER SUPPLY
FORT READ, TRINIDAD, BRITISH WEST INDIES
1942 – 1944
% POSITIVE PORTIONS
PERCENT
80
60
40
20
0
J F M A M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D
1942
1943
1944

Methods—One of the most difficult problems of water supply in the field has been to provide assurance against the water-borne spread of amebic dysentery and schistosomiasis. Both of these diseases had to be considered in the treatment of drinking water, and the latter in the case of water used for bathing, also. The standard Army portable and mobile filters, as supplied and routinely operated in the field, do not regularly remove either the cysts or the cercariae. Pending development of the new diatomaceous earth filters, which are now being produced, effective procedures were worked out to permit the use of the standard filters. The Water Equipment Laboratory of the Corps of Engineers, the National Institute of Health, and the Tropical Disease and Sanitary Engineering Divisions of the Preventive Medicine Service participated in the testing and development of methods of treatment. However, for areas where tropical disease is not a problem, the present sand filters are satisfactory and will be continued in use. A special light-weight, hand-operated filter, using a paper pad or diatomaceous earth has also been developed for use by very small groups.

The Lister bag and the canteen continue to be basic water supply equipment for troops, and methods have had to be developed to assure cysticidal action in them with standard Army issue sterilizing agents. This has been done and, in the meantime, nearly every sterilizing compound of promise has been tested in an attempt to find something better than that we now have. It is necessary to go slowly in the adoption of new sterilizing agents, and to be certain that the gains outweigh the disadvantages. For instance, the use of a sterilizing method radically different from the present hypochlorite procedure would require revision of all existing field training programs, changes in all field manuals, and retraining of troops in the field to use the new methods, as well as the provision of the new equipment and material. The time lost in training and

the errors that might occur in the field as a result of the change could readily counterbalance, during this war, all the expected advantages of a somewhat superior procedure.

Important developments in field water supply equipment include new rapid well drilling equipment and distillation units of astonishing efficiency. A new well can usually be sunk in less time than is required to clean out or repair a contaminated or damaged well; and such equipment is very valuable in making possible the use by troops of relatively pure ground waters in areas where surface supplies are seriously contaminated or are scarce. Distillation apparatus has been essential in many of our island operations and in some fixed posts.

SPECIAL PROBLEMS

Hotel and College Water Supplies—Two years ago the Army took over nearly 500 hotels of varying size, age, and condition, and proceeded to house in them several times as many people as they had ever previously contained. This heavy personnel load placed a dangerous burden on the water and sewerage systems of these hotels, accentuating the danger from sanitary defects.

As illustrating conditions, negative pressures of 10 inches of mercury were not uncommon on top floors of older hotels during peak water use. With the full coöperation of the Army Air Forces and the Corps of Engineers, these housing facilities were rapidly surveyed by trained sanitary engineers of the Sanitary Corps, and the numerous defects found were promptly corrected. In some cases new piping had to be installed. Rechlorination was also utilized where necessary to provide an additional margin of safety.

Somewhat the same condition existed in colleges when the Army Specialized Training Program was initiated and the same general policies were put into effect as in the case of hotels.

So far as is known no epidemics of water-borne disease resulted directly from Army occupancy of hotels or colleges. A few minor outbreaks of intestinal disease occurred which seemed traceable to other causes than to defects within the buildings.

Port and Ship Water Supplies—The problems of protecting port water supplies against contamination and of providing safe water at all times have been most difficult. Regulations were recently issued which should assure reasonable protection of port water supplies. A fully satisfactory solution of the ship water supply problem has not yet been reached though much progress has been made. Both port and ship water supplies are complicated by reason of military necessity, military security, and the many agencies involved.

Industrial Plant Supplies—The great industrial program necessitated by the war created many hazards in manufacturing plants due to cross-connections with process, cooling, secondary or other water supplies, and with waste discharge lines. In coöperation with the Provost Marshal General, and under the direction of a skilled engineer of the Sanitary Corps, a comprehensive and effective program for the early detection and prompt repair of defects was put into operation. This program has accomplished its initial objective and is now being reduced in scope, but its value is attested by the fact that water-borne disease has not been a factor of any importance in reducing industrial production.

Results—Some results of operation are available, both from this country and from overseas. In the continental United States, the average of all Army post water supplies show, for the third quarter of 1943, 3.47 per cent nonpotable samples; for the fourth quarter

of 1943, 2.17 per cent; for the first quarter of 1944, 1.33 per cent; and for the second quarter of 1944, 1.46 per cent. During these 12 months, 242,976 samples were examined, of which, 5,182 were non-potable, an overall average of 2.13 per cent.

Careful records of bacteriological examinations are maintained by our Service Command sanitary engineers. Water quality control in all Service Commands has been good. Records of the Fourth and Eighth Service Commands, shown herewith are typical. Interesting data are provided by studies of the records of our purchased supplies. When grouped by states, the averages show quite clearly the progress the various states have made in establishing effective water quality control programs. In general, our records show that the average quality of purchased supplies, before rechlorination, is inferior to Army-produced supplies.

Because facilities for large scale testing are infrequently available overseas, and also because many of our overseas installations are semi-permanent in nature, data from them are somewhat meager. In general, reliance for safety is placed on the maintenance of an adequate chlorine residual—generally 1 p.p.m., unless need exists for more. Records for one large overseas post and for one theater are shown herewith. The theater reports are remarkable in that they represent a dozen installations scattered over a length of some 2,500 miles, requiring a good organization and many hours of air travel on the part of the sanitary engineer in charge.

The program of water quality control is one of the activities of the Sanitary Engineering Division, which is charged with responsibility for all engineering factors that may affect the health of the Army. In the execution of this program, as in all of our other work, the Sanitary Engineering Division has had the full encouragement and support of the Army Medical Department, and especially of Brig. General James S. Simmons, Chief of the Preventive Medicine Service, of which we are proud to be a part. The close cooperation of the Repairs and Utility Branch of the Corps of Engineers has been an essential factor. Perhaps most of all, we are indebted to the skill, knowledge, enthusiasm, and aggressiveness of the engineers of the Sanitary Corps, for without them the program could never have been realized. These sanitary engineers are serving in every battle area and are contributing their full share to the amazing health record of the United States Army in World War II.

Laboratory Criteria of the Cure of Typhoid Carriers*

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MOST reports on the cure of typhoid carriers by cholecystectomy give the impression that only three-quarters of the operations, or less, succeed in eliminating the focus of the bacilli,[1, 2, 3] although some report better results.[4] In Massachusetts we have a record of approximately 90 per cent cures. Bigelow and Anderson in 1933[5] gave the only previous report from this state on the subject. At that time there had been 13 operations with 13 apparent cures. Since then we have accumulated records on 55 additional operations. This paper describes our further experiences with the hope of encouraging even wider use of cholecystectomy in the cure of typhoid carriers.

Recently the hope has been revived that non-surgical cure can be successful. Many of the current papers have described attempts at cure by medical treatment, particularly with sulfonamide derivatives. The idea that a chemical or biological agent might be used to eradicate the focus of typhoid bacilli is, of course, not a new one. By 1928, Stertenbrink[6] was able to summarize the results of more than 100 different agents which had been tried. All had been uniformly without success. Some of the papers on the use of sulfonamide derivatives have made claims of cure,[7, 8] but in most instances the authors have failed to follow criteria rigid enough to prove the case. Other reports have recorded failures.[9-12] We believe that the hope of non-surgical cure is as yet unjustified even with sulfonamide derivatives. We have had complete failures when four carriers were given large doses of the drug—two, sulfaguanidine for 7 days, and two, succinylsulfathiazole for 10 days.

As various chemical and biological agents have been tried and found to be failures, it has been necessary to return repeatedly to cholecystectomy as the only method which regularly cures an appreciable number of carriers. Bigelow and Anderson[5] emphasized the necessity of insuring that (1) the cases studied are permanent carriers, (2) they are gall-bladder carriers, and (3) the cure is permanent, if we are to arrive at the truth in regard to the effectiveness of cholecystectomy.

The criteria of the permanence of the carrier state should depend upon the fulfillment of one or more of the following conditions:

1. Persistently positive stool cultures for one year prior to operation, either in convalescents or in accidentally discovered carriers with no history of typhoid fever
2. History of typhoid fever 12 months or more prior to the date of operation
3. No history of typhoid fever, but a record of having caused a case at least 12 months prior to the date of operation

* Presented before the Laboratory Section of the American Public Health Association at the Seventy-third Annual Meeting in New York, N. Y., October 4, 1944.

To establish that a person is a bile carrier, and supposedly a gall-bladder carrier, it is necessary to demonstrate typhoid bacilli in the bile (1) by duodenal drainage prior to operation, or (2) by culture taken from the gall-bladder at the time of operation. Finding typhoid bacilli in the gall-bladder at post-mortem would seldom be of value in a study of the usefulness of cholecystectomy.

There is need for adherence to more rigid criteria for the cure of carriers, scientifically in order that reports of cures will not be prematurely made, and administratively in order that carriers will not be released from supervision until cure is certain.

We believe that the criteria of cure should demand that (1) 12 monthly negative stool specimens be submitted after the last positive stool; and (2) the bile be demonstrated to be negative by duodenal drainage by health department staff or others experienced in performing the procedure. While we still continue to require two diarrheal specimens obtained by giving magnesium sulfate through the duodenal tube, we are beginning to doubt the necessity for the procedure in the release of carriers, although such specimens may be useful in search for them.

Since the discovery, follow-up, and release of typhoid carriers depend almost wholly on laboratory procedures, it is self-evident that all bacteriological work on such carriers should be done by thoroughly reliable workers. Until our department was given the power of approving local laboratories, we required that the tests be performed in our own state laboratory.

Let us now study the 68 carriers operated upon in Massachusetts in the light of the above criteria. The evidence that they were permanent carriers is summarized in Table 1. Thirty-seven (54.4 per cent) of the 68 had positive stools at least 12 months prior to operation. In 18 (26.5 per cent) there was a history of typhoid fever one year or more before operation. This makes a total of 55 (80.9 per cent) in which permanence was established before operation. In only 13 (19.1 per cent) was there any question of the permanence of the carrier condition at the time of operation. Two are now known to have been permanent carriers because the operations failed to cure. Four had positive stools at least 6 months before operation, 2 had positive stools, and 2 caused cases at least 3 months before operation. In the other 5, the period of observation had been less than 3 months. Two were food handlers who wished to pursue their occupations, and 1 had an emergency operation because of gall-bladder symptoms. The other 2 were unwilling to postpone the operation since circum-

TABLE 1

Permanence of Carrier State
68 Typhoid Carriers Undergoing Operation
Massachusetts
1924–1944

Criteria of Permanence	Time Prior to Operation				
	12 Mos.	*6 Mos.*	*3 Mos.*	*Less than 3 Mos.*	*Total*
Positive Stools	37	4	2	1	44
History of Typhoid	18	..	..	..	18
Source of Case	..	..	2	4	6
	55	4	4	5	68

TABLE 2

Cures Obtained by Operation
68 Typhoid Carriers
Massachusetts
1924–1944

Result of Operation	Permanent Carriers Bile at or Prior to Operation		Probably Permanent Carriers Bile at or Prior to Operation		Total
	Positive	No Specimen	Positive	No Specimen	
Cured	33	4	5	0	42
Probably Cured	12	3	5	1	21
Failure	3	0	1	1	5
	48	7	11	2	68

stantial evidence indicated that they were permanent carriers.

Positive bile cultures were obtained in 10 carriers prior to operation, in 14 at operation, and both prior and at operation in 35, giving a total of 59 (86.8 per cent of the 68 carriers). In the other 9 we have no bacteriological evidence that the focus was in the gallbladder. However, cure was obtained in 4, apparent cure in 4, and the 9th was a failure.

The cures obtained by cholecystectomy are shown in Table 2. In this table the carriers are divided into permanent and probably permanent groups. Of the former, numbering 55, 37 were cured, 15 probably cured, and 3 were failures. Of the 13 in which permanence had not been definitely established, 5 were cured, 6 probably cured, and 2 were failures. It will be noted that 4 of the 5 failures had shown typhoid bacilli in the bile at or prior to operation. No bile specimen was examined on the 5th.

The persistence of positive stools after operation is shown in Table 3.

TABLE 3

Persistence of Positive Stools After Operation
68 Typhoid Carriers
Massachusetts
1924–1944

Stools Positive After Operation (Weeks)	Cured, Removed from List	No Final Bile Specimen		Not Cured	Totals
		Neg. Stools for 12 Mos.	Neg. Stools for 3 Mos. or More		
All Negative	31	10	5	..	46
1	..	1	..	..	1
2	5	..	..	..	5
3	..	..	..	..	..
4	..	..	1	..	1
5	..	1	..	..	1
6	..	1	..	..	1
7	1	..	..	..	1
9	..	1	..	..	1
14	..	1	..	..	1
19	1	..	..	..	1
22	2	..	..	..	2
52	1	..	..	..	1
65	..	..	..	1	1
66	1	..	..	..	1
80	..	..	..	1	1
90+	..	..	..	3	3
Totals	42	15	6	5	68

It will be seen that in 46 (67.6 per cent) of the 68 carriers no positive stools were obtained after cholecystectomy, indicating an immediate and permanent cure. In 11 of the 42 removed from the list, on the other hand, typhoid bacilli were found in the stool for periods as long as 66 weeks, after which the bacilli completely disappeared. Of the 15 who can be removed from the list after a final bile drainage, the longest period of positive stools after operation was 14 weeks, and in those followed for only 3 months, only 1 had any positive stools after operation. This indicates that those classified as probably cured will eventually prove to be cured.

TABLE 4

Percentage of Cures by Operation
68 Typhoid Carriers
Massachusetts
1924–1944

	Cures	*Failures*	*Total*	*Per cent Cured*
All Tests Complete	42	5	47	89.3
No Final Bile, Negative Stools for 12 months	15	..	15	
Sub-Total	57	5	62	91.8
No Final Bile, Negative Stools for 3 months	6	0	6	
Total	63	5	68	92.5

The percentage of cures is given in Table 4. Using only those released from the carrier list, there have been 42 cures and five failures, or 89.4 per cent cures. When those with negative stools for 12 months or more are included, there have been 57 cures and 5 failures, or 91.9 per cent cures. When the more questionable cases are included, there have been 63 cures and 5 failures, or 92.6 per cent cures. No matter which figure is used, we can say that we have had about 90 per cent cures in this series.

Certain facts in regard to these 68 carriers may be of interest. Nineteen were males and 49 females. Forty-five were discovered epidemiologically, 16 from release cultures on convalescents, 4 in routine hospital examinations, 2 in outbreaks of dysentery, and 1 in routine food handler examinations. Seventeen had caused no cases but the remaining 51 were responsible for 198 cases of typhoid fever. Except for 24 housewives, 12 food handlers, 6 inmates of mental hospitals, and 5 nurses, occupations were numerous and had no connection with the manner of spreading the disease. The average age at onset of the 51 who had a history of typhoid was 32.4 years. The average age at operation was 48.1 years. Of the 26 operated upon by a special surgeon designated by the department, only 1 was a failure. Of the 42 operated upon by local surgeons 4 were failures.

SUMMARY

1. In Massachusetts 68 typhoid carriers have had gall-bladder operations; there have been 63 cures and 5 failures (92.6 per cent cures).

2. Medical treatment, even with sulfonamide derivatives, cannot be relied upon to eliminate the gall-bladder focus. We have had 4 failures with sulfaguanidine and succinylsulfathiazole.

3. The gall-bladder should be well established as the focus before cholecystectomy is recommended. Only those cases in which typhoid bacilli are found in the bile either before or at operation should be included among failures.

4. The criteria of cure should consist of a

careful bacteriological follow-up for not less than 12 months of negative stool cultures followed by at least one negative bile.

5. Cholecystectomy is still the only effective method of curing typhoid carriers.

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APHA Testimony on Senate Bill 191 Available

The Association office has available a limited supply of copies of the testimony presented by Reginald M. Atwater, M.D., Executive Secretary of the Association, on February 28 before the Subcommittee on Education and Labor of the U. S. Senate on S. 191, the Hospital Construction Bill. Limited space in the *Journal* has prevented the publication of this testimony which Dr. Atwater presented summarizing the action of the Executive Board, which declared this bill to be reasonably in conformance with recommendation IV of the Association's declaration on Medical Care in a National Health Program.* Dr. Atwater, who appeared by designation of Abel Wolman, Dr.Eng., Chairman of the Executive Board, also reported the suggestions which had grown out of a study of the bill by the Subcommittee on Medical Care of the Committee on Administrative Practice. Joseph W. Mountin, M.D., Washington, D. C., is Chairman of the Subcommittee.

* *A.J.P.H.*, 34, 12:1252–1256 (Dec.), 1944.

Insect Problems in World War II with Special References to the Insecticide DDT*

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INSECTS and the diseases they carry have played a dominant rôle in determining the outcome of major military operations throughout recorded history. There appears to be little doubt that Napoleon's campaign against Russia failed because of outbreaks of louse-borne typhus and that his operations in the New World aborted because of yellow fever and malaria. The fall of the Roman Empire has been attributed by many writers to the occurrence of epidemic diseases both among the armies and among the civil populations. The lack of knowledge of the nature of the diseases involved, their means of transmission, and effective methods of control would make it impossible for an organization of the magnitude of the Roman Empire to continue its existence on such a scale. The statement that among our troops in the Spanish-American War insect transmitted diseases took more lives than Spanish bullets is well founded, as is also the statement that the long stalemate existing between the German and British troops in the Gallipoli campaign in World War I was due to the large number of men in each army who were incapacited by malaria.

Hans Zinsser has stated, in his interesting book *Rats, Lice, and History*, that "soldiers have rarely won wars. They more often mop up after the barrage of epidemics. And typhus, with its brothers and sisters—plague, cholera, typhoid, dysentery—has decided more campaigns than Caesar, Hannibal, Napoleon, and all the inspector generals of history. The epidemics get the blame for defeat, the generals the credit for victory. It ought to be the other way round—perhaps some day the organization of armies will be changed, and the line officer will do what the surgeon general lets him do. Among other things this plan would remove about 90 per cent of the expenses of the pension system." In discussing the collapse of the Roman Empire, Zinsser also makes the observation "This is still entirely applicable to modern times. Experience in the cantonments of 1917 and in the sanitation of active troops convincingly showed that war is today, as much as ever, 75 per cent an engineering and sanitary problem and a little less than 25 per cent a military one. Other things being approximately equal, that army will win which has the best engineering and sanitary services."

Far-flung commercial, social, and

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military operations provide many of the factors necessary to fan latent or endemic diseases into epidemic and often critical proportions. The assembling of troops from different sections of the country exposes non-immune groups to various strains of disease organisms, and disease carrying individuals in such movements give opportunity for local insect vectors to pick up infections and pass them on to others. The very concentration of heterogeneous groups as occurs in military operations is conducive to the transmission of disease from man to man by insect vectors. Furthermore, opportunities for the production of insanitary conditions favorable to the propagation of insects are multiplied under war conditions and the men have less chance of protecting themselves and their food against insect attack and contamination. Ready means of transfer of infected insects from place to place are also provided.

The principal insect-borne diseases of military importance in wars of early times were plague, typhus, cholera, typhoid, dysentery, yellow fever, and malaria. Some of these are not disseminated solely by insects, but under the insanitary conditions that usually prevailed in military operations of bygone days insect transmission assumed relatively greater importance. Even today these diseases are a constant threat despite the advances in preventive methods through the use of immunizing agents. I think it is safe to assert that the present world conflict, with its shifting of armies from continent to continent and from hemisphere to hemisphere, with its rapid transport of the injured and diseased from one quarter of the globe to another, would have resulted in a world disease cataclysm had it not been for our advanced knowledge of preventive medicine.

The attainment of our satisfactory position in regard to the prevention and control of these scourges has been the result of effective teamwork on the part of scientists and physicians of diversified training and experience. Contributions have been monumental in the fields of bacteriology, protozoölogy, chemistry, physiology, toxicology, engineering, entomology, and many others. To those who have made notable contributions to this advance the world owes a lasting debt of gratitude. Results of their labors are not felt in wartime alone, but serve civilization through years of peace and prosperity, and those of depression and travail, when ill health adds pain to the burdens of poverty.

LICE AND TYPHUS AND THEIR CONTROL

The entomological problems of World War II are similar to those of previous wars. Their potentialities, as indicated, are, however, greater because of the far-flung fighting forces and rapid transportation. Through research and its application, and through the proper adaptation of experience, potential epidemics have been promptly quelled. One of the outstanding examples of this is the control of the threatening outbreak of epidemic typhus in Naples after the liberation of that city by Allied forces. That striking result was obtained by effective organization and energetic application of control measures instituted by the army in coöperation with the U. S. Typhus Commission. Those control measures were fortunately made available by research on typhus vaccines by the National Institute of Health and other institutions, and through the discovery, by the Swiss firm of Geigy, of the insecticidal value of DDT. That discovery would have meant little had it not been for research carried out by E. F. Knipling at the Orlando laboratory of the Bureau of Entomology and Plant Quarantine, Dr. H. O. Calvery of the Food and Drug Administration,

Dr. Paul A. Neal of the National Institute of Health, and their associates, who adapted this insecticide to the particular needs of the Army in destroying body lice, and proved its safety.

Many others played a part in providing background for this outstanding accomplishment. Among these might be mentioned the chemical engineers who rapidly developed in the United States methods for producing DDT and facilities for large-scale production, the several government agencies who accelerated the production program, and the Army organization that placed the material promptly in the hands of those who carried out the actual field work.

The adaptation by entomologists of the Bureau of Entomology and Plant Quarantine of methyl bromide fumigation to present military needs places in our hands an added defense against lice and the diseases they carry. An exposure of infested garments to methyl bromide for only 45 minutes in a special fumigation bag or chamber gives a complete kill of all lice and their eggs. This method is especially useful in delousing prisoners of war.

It is difficult to foresee just what additional typhus problems may be encountered during the war or in the unsettled post-war period. It is likely that next winter will bring new outbreaks of this louse-borne disease, both among armies and among civilians. It is safe to say that with our present defensive weapons against epidemic typhus in hand, our own military forces are not likely to suffer seriously in any event, nor would there appear to be any valid reason for the occurrence of widespread outbreaks of the disease among civilians. Eradication of human lice is the solution of this disease problem and with DDT insecticides available it is an easy and practical one. Head lice and pubic lice may also be eliminated through the proper use of this material.

SCRUB TYPHUS, MITES, AND TICKS

A rickettsial disease known as scrub typhus, or Japanese river fever, is causing some concern. This disease occurs in the Southwest Pacific area and extends northward into Japan. Although mortality caused by certain local strains of the disease is high, it is not regarded as a disease of much military importance. Scrub typhus is related to Rocky Mountain spotted fever and other typhus diseases. It is carried by mites similar to the common chiggers, or red bugs, of our southern states. Certain insecticides properly applied to the clothing prevent the mites from attaching to the skin and should largely prevent the disease. The mites concerned are in the first, or larval, stage and normally attach to and engorge upon rodents. Subsequent stages do not attack man or animals but are scavengers. The clearing away of grass, underbrush, decaying wood, and humus from around camps causes the mites to disappear in a short time and thus reduces the chance of infection. The destruction of the mites near the soil surface may be brought about by burning over the areas or presumably by applying fine sulfur as a dust, as has been found valuable in chigger control in this country.

Scabies, or itch, has not been a serious problem in this present war but it must be dealt with in all large-scale military operations. Infestations of scab mites are continuously present among civilian populations, especially in European countries, and the close association of large groups of men in training and combat gives opportunity for the infestations to spread and become more severe. As a result of research on this problem, new, quick acting, and practical remedies have been developed and put to use.

Ticks are important carriers of disease but they have not come into prominence in this respect among our

military personnel. They have proved very annoying, especially as a result of the attack by large numbers of seed ticks and nymphs to troops on maneuver. Such tick-borne diseases as Rocky Mountain spotted fever, tularemia, and relapsing fever apparently have not come into prominence anywhere during the war. The recently recognized disease known as Bullis fever, a few cases of which occurred among troops near San Antonio, Tex., is probably induced by the lone star tick, which is abundant in that area. It cannot be regarded as of military importance.

FLEAS AND DISEASE

Fleas are often the subject of jokes but their potentialities as annoyers and disease carriers cause them to be regarded seriously by the informed. The penetrating flea, or chigoe, of tropical Africa and America is able, through its habit of burrowing into the feet of man, seriously to handicap infested individuals. Care in keeping the bare feet off infested ground largely prevents infestation, and little trouble has been experienced by our troops.

The common occurrence of human and dog and cat fleas in North Africa gave rise to much annoyance and complaint and demonstrated the value of the MYL louse powder for protection against those pests.

Bubonic plague and the fleas that transmit it are widespread in present war theaters, but to date the disease has not been an important military problem. Plague still constitutes a serious threat in eastern Asia, especially to civilian populations. The problem also deserves continued watchfulness on the part of the military, and the adoption around military installations of vigorous rodent control operations and every other precautionary measure.

Endemic typhus transmitted by rodent fleas, although a potential problem among troops, has not been given a chance to cause trouble in our training camps in the South where the disease is prevalent.

MOSQUITO-BORNE DISEASES

The mosquito-borne diseases, malaria, dengue, and filariasis, are major problems in World War II, as would be expected. At no period in world history have the forces of any nation been subjected to exposure to these diseases under so many different conditions. This means bringing large groups of non-immunes into contact with many different strains of the maladies and with a large number of insect vectors of divergent breeding and biting habits. Furthermore, little sound information was available regarding the diseases and insect carriers in many of the fields of operation. For example, in Guadalcanal, New Britain, New Guinea, Halmahera, and adjacent islands, our forces were truly plunging into the unknown. It was soon realized that disease was a more formidable enemy than the Japs and that without effective control of disease the outlook for early defeat of the Japanese was indeed gloomy. Experience in the early campaigns was not too encouraging, but as the operations proceeded, the results of research in preventive medicine and the results of early experience were brought to bear squarely on the several problems, and infection and incapacitation were rapidly lowered. In these respects we appear to have a distinct advantage over our adversaries.

The possession of effective drugs, mosquito repellents, mosquito larvicides, and other devices for protection against mosquitoes, in addition to a knowledge of drainage methods and organization, equipment, and supplies for putting these measures into effect, permit us to face the future with confidence. Perhaps one of our greatest dangers is

overconfidence. A very low malaria rate and scarcity of mosquitoes encourages relaxation of discipline; and certainly discipline is a big factor in the prevention of disease among troops. The dissemination of information regarding insect-carried diseases and their prevention is deemed of paramount importance since the success of such prophylactic programs is so largely dependent on the intelligent coöperation of the entire personnel.

Research work by entomologists and chemists of the Bureau of Entomology and Plant Quarantine in the field of mosquito control has netted splendid results in the present war. Years of work in the development of insecticides and ways of applying them, biological studies of mosquitoes and related forms, and work in the identification and classification of mosquitoes have furnished an unexcelled foundation for more intensive research. Some of this research had progressed to a point where the results could be taken advantage of by the military almost at once. One of these products of research by L. D. Goodhue and W. N. Sullivan which have proved of inestimable value is the method of applying insecticides in aerosol form. Through the coöperation of military authorities and commercial groups, the aerosol bomb has been made available in every overseas camp where disease-carrying mosquitoes are to be found. The bombs have also served a highly useful purpose in destroying dangerous insects in aircraft and ships in which they might be introduced into this country or scattered beyond their normal range in other countries.

Likewise the experience gained in the use of aircraft in applying insecticides and the equipment and insecticides developed for that purpose gave a substantial basis for the use of airplanes in combating mosquitoes and other insect pests of military importance.

The Bureau of Entomology and Plant Quarantine with funds provided by the Office of Scientific Research and Development and at the request of the Office of the Surgeon General of the Army initiated an intensive program of research looking toward the development of more effective repellents and other devices for the protection of troops from mosquitoes and other dangerous insects, and for the development of mosquito larvicides. As a result of this work three materials harmless to man and reasonably effective in repelling insects have been adopted and widely used by the Army and Navy. These findings have been an important factor in reducing the incidence of mosquito-carried diseases and they will doubtless play a still larger part in this respect in the future. The results of this research have been put to practical use in a very effective way in training camps and war theaters by the Medical and Sanitary Corps of the Army and the Medical Corps of the Navy.

The question is continually arising as to the danger to this country from the introduction of new diseases or strains of disease organisms with returning troops, or of the danger of accidentally bringing new insect vectors into this country. These questions are receiving the attention of the various government agencies involved, and certain safeguards are being adopted. The application of some of the procedures for insect control already referred to should do much to minimize these dangers.

FLIES AND DISEASE

Flies are recognized as an almost universal problem in military operations. There are many kinds with diverse habits. Some breed in cadavers, others in garbage, and still others in excrement. Nearly all may be concerned with the transmission of disease organisms. Since the development of

effective protection against typhoid by immunization, dysentery is the most important of these.

The general adoption of approved methods of manure and garbage disposal has done much to reduce fly abundance, and the protection of food from flies is of great importance in the prevention of enteric diseases. During the period immediately following occupation by our forces, blowflies are frequently found in abundance in areas previously held by the Japs. These emanate from the bodies of enemy dead, from exposed food supplies of the enemy, and from their insanitary camps. These conditions are promptly corrected by disposal of breeding material, by the use of insecticidal sprays, and by properly constructed and baited traps. When DDT is available in adequate quantities its use as a residual spray will doubtless assist greatly in reducing the danger of food contamination from flies of all kinds.

BEDBUG CONTROL

Bedbugs, although of little or no importance in the transmission of disease, are a source of much annoyance and, if abundant, lower troops' efficiency and adversely affect morale. These pests are so easily introduced into camps and multiply so rapidly that they not infrequently become a troublesome problem. Frequent thorough inspection of barracks and prompt treatment of minor infestations are the recommended practices. Thorough spraying of beds, including mattresses, with an insecticidal solution of DDT gives a complete kill, and protects against reinfestation for a period of months. The bedbug-proofing of mattresses by impregnation with DDT insecticides of the covering in the process of manufacture appears to be sound.

Blanket impregnation would also aid in controlling these pests, and such treatment would incidentally protect the blanket against clothes moth and carpet beetle attack.

The importance of insects as carriers of diseases of military importance was fully recognized by the Surgeon Generals of the Army, Navy, and Public Health Service, and machinery was set in motion, even before we entered the war, to deal effectually with them. Information on the distribution and disease-transmitting potentialities of insects in different theaters was assembled, control methods were evaluated, and steps were taken to fill gaps in our knowledge. Thus through the Office of Scientific Research and Development of the National Defense Research Council research projects were provided for in the Department of Agriculture and various institutions, and the information was rapidly conveyed to our military authorities and those of our Allies. The results of this teamwork speak for themselves. The incidence of malaria, although high in some areas in early campaigns, has been brought to a commendable low; typhus outbreaks have been avoided; and typhoid, plague, and yellow fever, which have been determining factors in other wars, have been banished from our armed forces. Further reduction of sick rates from dengue, dysentery, and malaria are being striven for and may be expected as the development of more effective control measures proceeds and as they are put into operation in the field.

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SHALL WE DECLARE WAR AT SAN FRANCISCO?

THE forthcoming conference of the United Nations at San Francisco is not to be merely a Peace Conference. It will deal with the cleaning up of the confusions and tragedies of the past; but also with planning for the future. Its emphasis will be positive, rather than negative. Its purpose is not to make peace with Germany and Japan; but—on behalf of all peoples of good will—to declare war against war, war against selfish and aggressive nationalism, war against injustice and exploitation, war against political and economic chaos.

Among other things it is our confident hope that it will declare a new and intensified war against disease.

There is no field where international coöperation is easier or more obvious than in the war against disease. Furthermore, from the notably successful career of the Health Section of the League of Nations, we know almost exactly what type of international health organization is needed. We can blueprint the desirable machinery with confidence and reasonable completeness. We are not thinking in terms of any Global Super-Health-Department, but of a sort of General Staff, for the coördination of the results of research and of administrative practice in the field of public health, for the interchange of epidemiological intelligence, for aid in the training and distribution of sanitary personnel, for placing the best available expert service at the disposal of those nations who desire assistance in solving the urgent health problems of the post-war world.

The backbone of such a health organization must be its Secretariat. This need not be a large body and may be thought of at first in terms of scores rather than hundreds of experts. These experts must, however, be of high professional standing and of full loyalty to ideals of international service, under a Director of the finest quality. The Secretariat should—as in the case of the League of Nations—work under general policies laid down by a Health Committee of fifteen to twenty members, chosen as individuals on the ground of their special competence.

Finally, the Health Organization should have the aid of an Advisory Council made up of the heads of all national health services of the United Nations, to be convened once a year for criticism and advice.

In one respect, the League machinery should be modified, by the inclusion of definite provisions for regional health organizations. The lack of decentralization was perhaps the most serious defect of the Geneva covenant. We have in the Pan-American Sanitary Bureau an established and functioning regional organization for the Americas which must be tied into the United Nations program; and similar regional machinery should be set up for other continents or (in the case of Africa) parts of continents.

This is, in general, the type of Health Organization needed for the World War against disease. We trust that the United States delegates at San Francisco will make such an organization an integral part of their program.

THE HILL-BURTON BILL

SENATE BILL 191 "To amend the Public Health Service Act to authorize grants to the States for surveying their hospitals and public health centers and for planning construction of additional facilities, and to authorize grants to assist in such construction" is one of the measures now before the Congress which is of vital interest to all public health workers. Its aim is a threefold one: to inventory existing facilities, to develop programs which will insure "the necessary physical facilities for furnishing adequate hospital, clinic and similar services to all of the people," and to aid, through federal grants, the construction of such physical facilities as may be necessary to develop such a program.

The operation of the plan is placed in the hands of the Surgeon-General of the U. S. Public Health Service under the general guidance of a Federal Advisory Council, and payments shall, in general, be made to the state concerned—after approval of any specific project. Payments may, however, be made directly to an institution desiring aid for a needed project if the state is not authorized by law to make payments to the applicant in question. This will make possible aid to private institutions, particularly those supported by religious bodies.

Any such measure as this obviously requires very careful study as to administrative detail. The Association was represented at hearings on this bill held in February by Dr. Reginald M. Atwater, who made certain important concrete suggestions in regard to the constitution and powers of the Advisory Council, the importance of financial participation by the states themselves, the need for emphasizing the health center features of the bill and other details which, we trust, may receive favorable consideration.

In general, the Hill-Burton Bill has received wide support from hospital, health, and medical authorities. It appears to be favorably regarded by Congressional leaders, except the band of die-hards who are still living in the 18th century. The Bill has been found by the Executive Board of the A.P.H.A. to be in reasonable conformity with Recommendation IV * of the official policy of our Association adopted last fall. It should, in principle, receive the support of the public health professions.

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* *A.J.P.H.*, 34, 12:1254 (Dec.), 1944.

HATS OFF TO THE CENSUS BUREAU

THE original purpose of the Vital Statistics Division of the U. S. Bureau of the Census was to furnish the basic vital statistics which are so fundamental for the measurement of population changes and public health progress. The passage of social security legislation has emphasized the need for vital records as documents required to establish facts concerning the status of individuals. The use of such documents for both employment and security purposes has been greatly extended during the war and promises to be expanded further by legislation relating to dependency and allowances for various purposes. During the past five years, the Vital Statistics Division has notably increased its technical staff and broadened its consultive program.

The principal statistical achievements of the Division in the last five years revolve largely around special work of a statistical nature made possible during the 16th Decennial Census, and in the development of a program for the analysis of the data obtained. These studies include a nation-wide survey of hospitals and their facilities, the findings of which have proved to be of great value during the war period in the planning for adequate hospital facilities; a volume of mortality summaries which put forth in small packages convenient for use by doctors and public health workers the statistics by cause of death and by age groups; a Rate Volume summarizing the important vital statistics rates from 1900 to 1940; a nation-wide test of birth registration completeness; and several studies on the significance of changes in the *International List of Causes of Death* classification. Two other important statistical advances not tied so closely with the decennial census are: the transfer of the statistics from a place-of-occurrence basis to a place-of-residence basis, and a considerable development in the division's work along the lines of international statistics. In the international field, the division has coöperated, and is still coöperating, with the Latin American republics by providing technical consultants to aid the development of vital statistics programs in those countries. Also, a number of fellowships have been granted to qualified Latin Americans for training in vital statistics work in the United States.

The greatest achievement of the past five years has, perhaps, been the progress made, through coöperation between the states and the federal government, in furthering the correlation of all agencies dealing with vital records and vital statistics into a strong and coördinated system. A "Council on Vital Records and Vital Statistics" has been formed, made up of nine state registration executives (including two representatives of the American Association of Registration Executives and seven regionally-elected delegates) and two members of the federal bureau. This council met on November 28–30, 1944, and prepared an admirable "Plan for the Coördination of Vital Records and Vital Statistics in the United States." The Vital Statistics Division of the Bureau of the Census plans to implement in every way possible the work of this Council on Vital Statistics and Vital Records in bringing about a better coördinated system for the country. Along statistical lines its goal is to improve the birth and fertility statistics of the division so that they compare favorably with the work now being done on mortality; to expand its international vital statistics program; to sponsor the development of small-area statistics; and to promote an interrelationship of vital statistics with population and social statistics.

Other current activities of the Bureau of the Census are related to a new and particularly important problem, that of the proposed "basic statistics program" including reconversion statistics. In August, 1944, the President requested the Bureau of the Budget to secure "accurate and comprehensive information concerning industrial production, the status of industry, and the well-being of the nation's workers." The interdepartmental program which was developed to implement this request involved the assumption of heavy responsibilities by the Bureau of the Census, including the expansion of the *Monthly Report on the Labor Force* to provide current estimates for geographic regions, the principal states, and the major production areas, and participation in consumer income studies for 1944 and 1945 income, the data for which are to be obtained through surveys of representative national samples of rural and urban households.

It is proposed to conduct an annual sample census of population, beginning in April, 1946, designed to provide current statistics on the number and characteristics of the population for states and for cities down to 100,000 inhabitants. Information from such a census, together with quarterly information from an expanded monthly report on the labor force, and the proposed income surveys would make available unparalleled current statistics on the distribution and characteristics of the population, marital status, family composition, and internal migration. The availability of such current population information would have important implications for vital statistics, in that it would permit the computation of current fertility, mortality, and morbidity rates for both the nation as a whole and its major subdivisions.

The public health profession owes a debt of gratitude to Director J. C. Capt and other officials of the Bureau of the Census for the breadth of vision in its program development, and, particularly, to Dr. Halbert L. Dunn for his able and coöperative direction of the Vital Statistics Division of that bureau.

ORGANIZED LABOR BECOMES INCREASINGLY HEALTH CONSCIOUS

WE referred in this column a year ago to the importance of organized labor as an ally in the public health movement; and to the material prepared by the N.T.A. to further progress in this field.[1] Recent advances on the Pacific Coast indicate how valuable such an alliance may be.

Theoretical interest in public health on the part of organized labor is no new thing, but theory has only recently been translated into effective action. The A. F. of L., as early as 1909 endorsed a broad health program, including not only industrial health and safety but "facilities for protecting individual and family health" and "knowledge of hygiene and sanitation." It emphasized the benefits of desirable and necessary improvements in length of life, accelerated growth in population, increased comfort, earning power, and efficiency. The Health Center maintained by the International Ladies' Garment Workers Union of New York City has performed valuable services on the local level.

The C.I.O. and many of its constituent unions have been keenly aware of the importance of more adequate health service and of the need for a closer link between public health activities and provision of individual medical care. Several locals have organized health committees or health divisions. In certain instances,

unions have developed their own health service programs, sometimes including prepayment plans. Significant among these is the "Health Institute" (actually a clinic for the diagnosis of compensation cases) established by the United Automobile Workers in Detroit. This institute has a staff of physicians operating under a Medical Advisory Board which includes three members delegated by the U. S. Public Health Service. The Institute has grown substantially, and last spring purchased the former residence of Edsel Ford for remodeling as its clinic.

The most outstanding example of progress in this field is the Northern California Union Health Committee which represents both A. F. of L. and C.I.O. unions in the San Francisco Bay area. This organization grew out of a Health Conference held in January, 1944, which outlined a program involving four main elements: nutrition, public health, industrial safety, and health insurance. The committee has been aided financially by the Rosenberg and Columbia Foundations and by contributions from tuberculosis associations during its demonstration period; but it is expected that it will ultimately be supported by the unions concerned. The able Executive Secretary of the committee is Mrs. Marianna Packard, San Francisco (a member of the A.P.H.A.). The friends of the movement are kept informed of its progress through a monthly *Newsletter*.[2]

The achievements of the Union Health Committee in its first year of operation are truly astounding. Aside from primarily political action (in support of the Bulwinkle Bill and of federal and state health insurance programs, for example) it has already carried on five enterprises of major importance.

Working with the City Health Department and the Tuberculosis Association, it has carried out a mass health examination program among the members of three waterfront unions which included x-rays and Wassermann tests of 3,650 men and women, which has since been extended to other union groups.

It has conducted, at the request of the culinary unions, a city-wide drive for the improvement of restaurant sanitation, correlated with accelerated inspection by the City Health Department staff.

It persuaded the Health Department to make a special survey of the San Francisco Embarcadero district from the standpoint of adequacy of feeding facilities and in coöperation with the longshoremen's and warehouse-men's unions, and the War Food Administration prepared a serviceable plan for improving facilities of this kind in the waterfront district.

In the field of industrial hygiene, the Union Health Committee has made a canvass of labor-management committees with regard to existing safety programs and their effectiveness; it is preparing a safety code for rigging, a process not heretofore covered; it is stimulating the organization of shop steward safety committees, not to serve as grievance committees but as coöperators with management. The committee will "work to know where to turn for technical assistance, what agencies set standards, what part labor and management play in setting standards, what determines whether they are being followed, and where responsibility lies for maintenance and enforcement of safety standards."

Finally, in view of the shortage of physicians in the Richmond area, the committee (on the request of an official agency and of a large union group) made a comprehensive evaluation of needs and resources, and after holding meetings and providing for publicity, held a joint conference with representatives of the City Council, the local health departments, the medical society and the War Manpower Commission which resulted in a program for strengthening a local Emergency Medical Center, and promoting its more effective use.

This is a remarkable record for twelve months. Obviously such achievements must be dependent on unusual qualities of local leadership. The health officer who may find such leadership in his local unions would do well to take advantage of it.

REFERENCES

1. Organized Labor, a New Ally for Public Health. Editorial, *A.J.P.H.*, 34, 3:280 (Mar.), 1944.
2. Northern California Union Health Committee, 57 Post St., San Francisco 4.

LETTER TO THE EDITOR

TO THE EDITOR:

In respect to your editorial challenge in the January JOURNAL, that Baltimore had the first Board of Health in the United States, "or any other country," may I submit the following: "By royal decree of the Spanish Crown in 1768 the Provincial Board of Health of the Province of Puerto Rico was created. The Board was composed of the following members: The Governor General, Secretary of the Treasury, Senior Naval Officer, Vice-President of the Provincial Commission, Mayor of San Juan, Secretary to the Governor General, Inspector General of Public Works, President of the Sub-delegation of Medicine, President of the Sub-delegation of Pharmacy, Director of the Quarantine, City Engineer of San Juan, three physicians, one pharmacist, one lawyer, one representative to the Spanish Courts, the Chief Medical Officer of the Army and a veterinarian. The Board had a secretary and an executive committee."

This information was secured in 1930 from Documents shown me in the Insular Department of Health. I was told that a distinguished historian of the University of Puerto Rico (name I have forgotten), who had made extensive research of the old official Spanish records at Madrid of the history of Puerto Rico, had confirmed the above statement concerning the creation of the Provincial Board of Health.

Dr. A. Fernos Isern, Commissioner of Health, gave me an interesting account of the first vaccination against smallpox campaign in 1803, seven years after Jenner's discovery. "Fransisco Oller, M.D., Chief Military Surgeon of the port of San Juan, was influential in the importation, from our neighbor island of St. Thomas, of a negress with vaccine pustules in both arms. The method of vaccination had been introduced into St. Thomas shortly before. Dr. Oller vaccinated 1570 persons in 23 days, and stemmed the tide of an epidemic of smallpox which then ravaged the Island."

"A year from that time Fransisco Javier de Balmis, M.D., honorary physician to the Royal Family at Madrid, arrived at Puerto Rico at the head of an expedition organized by the order of King Charles IV, entrusted with the introduction of vaccination into the overseas Spanish Provinces. Puerto Rico was one year ahead of the distinguished expedition."

It is my understanding that this Board of Health has been in continual operation since it was first organized in 1768, although under several different forms and names. My conclusions of these studies are briefly stated in my report "Puerto Rico, an inquiry as to the health of children," on page 35 as follows: "This evolution (Board of Health) was not accomplished without

legislative mistakes and political interference as is often observed elsewhere, even under more favored surroundings; yet through the years of trial and error, there has been a leadership with vision . . . until today (March, 1930), the Insular Department of Health has a merited professional standing equal to the better Health Departments in the United States."

The history of vital statistics was interesting, too, although unrelated to the Board of Health until 1884. "Alonso Manso, the first Catholic Bishop of Puerto Rico, established the parish registers in 1513. His order required that a record of all marriages, births and deaths be made in books especially designed for that purpose." As Puerto Rico was 100 per cent Catholic in those days, the records were supposed to be quite complete; but unfortunately, in 1625, these priceless records were destroyed by the Dutch who captured San Juan and destroyed all public records.

In 1884, the King of Spain promulgated by decree the Spanish Civil Registry Law, which continued in force at the time of American occupation and until the Insular legislature passed an Act in 1911 to establish a law of Civil Register, now known as the Vital Statistics Law.

SAMUEL J. CRUMBINE, M.D.,
Jackson Heights, L. I., N. Y.
(Formerly General Executive, American Child Health Association)

February 1, 1945.

THE ASSOCIATION COMMITTEE LISTS

The following pages again bring to the readers the lists of Association officers and Committee members. Once again they make a goodly company representing altogether more than 150 committees and other councils, a capable and loyal group of workers.

A certain proportion of the names of those formerly carried on such lists do not appear here. They have the Association's thanks for work well done in other years and for the fine spirit in which they have recognized the fact that, for the sake of the Association and its future effectiveness, leadership must be shared and leaders constantly developed through the assumption of responsibility. Our Association is stronger today because leaders periodically have stepped aside in order that others may step forward to acquire such knowledge as they themselves have gained.

Change in leadership is becoming an accepted policy in the Association. Such a professional society is never strong if an informed few lead many uninformed though loyal followers. A strong association is composed of leaders many of whom could at any time take their turn and lead.

As we gratefully acknowledge the debt to those who have rendered their service as they carried their responsibilities of office, we turn with hope and expectation of other achievements to the men and women who are now to lead.

American Public Health Association

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1944–1945

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1944–1945

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Standard Methods Committee for Frozen Desserts and Ingredients (Joint with the Committee of Food and Nutrition Section)

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James Gibbard, Department of Pensions and National Health, Ottawa, Ont.

Referee [1] *for:*

Chemical Analysis of Frozen Desserts and Ingredients—J. H. Shrader, Ph.D., Eastern Nazarene College, Wollaston, Mass.
Microbiological Examination of Frozen Desserts—A. H. Robertson, Ph.D., State Department of Agriculture and Markets, Albany, N. Y.
Microbiological Examination of Ingredients—F. W. Fabian, Ph.D., Michigan State College, East Lansing, Mich.
Sediment Testing of Frozen Desserts and Ingredients—K. G. Weckel, Ph.D., University of Wisconsin, Madison, Wis.

Associate Referee [2] *for:*

Chemical Determinations of Modified Babcock Methods for Frozen Desserts—W. H. Martin, Kansas State College, Manhattan, Kans.
Chemical Determinations of Stabilizers in Frozen Desserts—F. Leslie Hart, Food and Drug Administration, San Francisco, Calif.
Determination of Overrun in Ice Cream—P. S. Lucas, Michigan State College, East Lansing, Mich.
Microbiological Examination of Condensed and Evaporated Milk—Paul A. Downs, Ph.D., University of Nebraska, Lincoln, Nebr.
Microbiological Examination of Dry Milk—Paul S. Prickett, Ph.D., Evansville, Ind.
Microbiological Examination of Eggs—M. Thomas Bartram, Ph.D., Food and Drug Administration, Washington, D. C.
Microbiological Examination of Flavors, Colors, Fruits, and Nuts—M. J. Prucha, Ph.D., University of Illinois, Urbana, Ill.
Microbiological Examination of Sugar—H. H. Hall, Southern Regional Research Laboratory, New Orleans, La.
Sampling for Chemical Determinations—P. H. Tracy, Ph.D., University of Illinois, Urbana, Ill.

Standard Methods Committee on Biological Products

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Harold W. Lyall, Ph.D., *Acting Chairman,*

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* In Active Military Service.
[1] Referees are members of the Standard Methods Committee upon which they serve.
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Milton V. Veldee, M.D., National Institute of Health, Bethesda, Md.

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Standard Methods Committee for the Examination of Germicides and Antibacterial Agents

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Referee[1] *for:*

Chemical Antiseptics — Henry Welch, Ph.D., Food and Drug Administration, Washington, D. C.
Chemical Disinfectants — Charles M. Brewer, U. S. Department of Agriculture, Beltsville, Md.
Detergents—Walter L. Mallmann, Ph.D., Michigan State College, East Lansing, Mich.

Associate Referee[2] *for:*

Antibiotic Agents—Selman A. Waksman, Ph.D., Agricultural Experiment Station, New Brunswick, N. J.
Disinfection of Air by Germicidal Vapors and Mists—O. H. Robertson, M.D., University of Chicago, Chicago, Ill.
Disinfection of Air by Ultra-violet Irradiation—Alexander Hollaender, Ph.D., National Institute of Health, Bethesda, Md.
Fungicidal and Fungistatic Agents—C. W. Emmons, Ph.D., National Institute of Health, Bethesda, Md.
Suppressive Measures for the Control of Dust—Major Clayton G. Loosli, M.C., Army Service Forces, Board for the Investigation of Epidemic Diseases, 950 East 59th Street, Chicago, Ill.

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All Fellows (11) and members (101) in the States of the Southeast Region—Kentucky, Virginia, North Carolina, Tennessee, South Carolina, Arkansas, Florida, Mississippi, Alabama, Georgia, Louisiana.

Committee on Public Health Education Problems in the Northeastern Region

Charles E. Lyght, M.D., *Chairman*, 1790 Broadway, New York, N. Y.

Membership:

All Fellows (69) and members (312) in the States of the Northeast Region—Maine, Vermont, New Hampshire, Massachusetts, New Jersey, Rhode Island, West Virginia, Maryland, Pennsylvania, New York, Washington, D. C.

Representatives of the American Public Health Association to Other Organizations and Committees for 1945

Advisory Council on Medical Education
William P. Shepard, M.D.
James A. Doull, M.D., alternate

American Association for the Advancement of Science
Reginald M. Atwater, M.D.
Abel Wolman, Dr.Eng.

American Committee on Maternal Welfare
Thomas Parran, M.D.

American Documentation Association (1943–1946)
Halbert L. Dunn, M.D.

American Hospital Association (liaison representative)
Charles F. Wilinsky, M.D.

American Society of Civil Engineers and Federation of Sewage Works Associations—Joint Committee for Revision of the Report on Definition of Terms Used in Sewerage and Sewage Disposal Practice
Gordon M. Fair
H. A. Whittaker

American Society for Testing Materials—Committee on Soap
Carl R. Fellers, Ph.D.

American Standards Association
Building Code Correlating Committee (1943–1945)
J. Lloyd Barron, C.E.
W. Scott Johnson, alternate

Letter Symbols and Abbreviations for Science and Engineering
Earle B. Phelps

Safety Code for Dry Cleaning Establishments
H. H. Schrenk, Ph.D.
H. G. Dyktor, alternate

Safety Code for Exhaust Systems
Henry Field Smyth, M.D.

Sectional Committee on Allowable Concentrations of Toxic Dusts and Gases
J. J. Bloomfield

Sectional Committee on Bedding and Upholstery—Subcommittee on Sterilization
F. J. Maier

Sectional Committee on Building Code Requirements for Light and Ventilation
Rollo H. Britten
C.-E. A. Winslow, Dr.P.H.

Sectional Committee on Minimum Requirements for Plumbing and Standardization of Plumbing Equipment, A–40 and Subcommittee No. 1
M. Warren Cowles
Sol Pincus, C.E.

Sectional Committee on Places of Outdoor Assembly
J. Lloyd Barron, C.E.

Sectional Committee on School Lighting
Leonard Greenburg, M.D.
Joel I. Connolly, alternate

Sectional Committee on the Safety Code for Industrial Sanitation in Manufacturing Establishments
Leonard Greenburg, M.D.
Kenneth E. Markuson, M.D., alternate

Ventilation Code
Earle B. Phelps

Commission for the Study of Biological Stains
William D. Stovall, M.D.

Council on Rheumatic Fever
David Rutstein, M.D.
George M. Wheatley, M.D.

Joint Committee on Definition of Terms Used in Water Works Practice (Joint with the American Society of Civil Engineers and the American Water Works Association)
Earle B. Phelps, *Chairman*
Sol Pincus, C.E.
Ralph E. Tarbett, C.E.

National Conference for Coöperation in School Health Education
Ira V. Hiscock, Sc.D.

(Revision of Report on School Health Policies)
Dorothy B. Nyswander, Ph.D.

National Congress of Parents and Teachers—Advisory Committee on Health and Summer Roundup of Children
Dorothy Mendenhall, M.D.

National Council on Rehabilitation
Don W. Gudakunst, M.D.

National Conference on Uniform Traffic Accident Statistics
Robert J. Vane

National Health Council
Reginald M. Atwater, M.D.
Louis I. Dublin, Ph.D.
Ernest L. Stebbins, M.D.

National Nutrition Advisory Committee
Robert H. Riley, M.D.

National Safety Council—Home Safety Advisory Committee
Edward S. Rogers, M.D.

Film Safety Awards Committee
Harry E. Kleinschmidt, M.D.

National Technological Civil Protection Committee
Abel Wolman, Dr.Eng.
Arthur E. Gorman, alternate

BOOKS AND REPORTS

All reviews are prepared on invitation. Unsolicited reviews cannot be accepted.

All books reviewed in these columns may be purchased through the Book Service.

Stitt's Diagnosis, Prevention and Treatment of Tropical Diseases—*By Richard P. Strong, M.D. (7th ed.)* 2 Vols. *Philadelphia: Blakiston,* 1944. 1827 pp. **Price, $21.00.**

This is the stuff of which public health practice and personal preventive medicine is built. If what is here so admirably presented were put to its logical and complete use by each physician in his personal rôle as diagnostician and therapeutist and by the medical officers of civil and military government with their authority under the law and their resources for education and administration, the face of the world and the outlook upon it by mankind would be immeasurably brightened from pole to pole.

This book from the mind and hand of Admiral Stitt, rewritten and several times reëdited by Dr. Strong, has since its first appearance in 1914 been an essential companion for every physician wishing to practise the medicine of science in the tropics of our world. The present and seventh edition has kept pace with the swift advances of recent discovery and invention for the distinguishing of a multitude of obscure and rare diseases and their appropriate treatment and, within limits, their prevention.

In its new two volume form we have a condensed encyclopedia rather than a text or reference book, a manual for immediate and practical use rather than a monographic series of descriptions. The eighteen hundred pages, liberally illustrated, packed with supplementary discussion in small type and offering adequate references at the end of each chapter, offer a systematic discipline in this field of medicine for student or teacher, practitioner of medicine or public health, devotee of the basic sciences or administrator of civil or military affairs.

The pattern of presentation is quite uniform and includes the necessary fields of information. Definition, geographical distribution, prevalence, etiology and epidemiology, transmission, pathology, symptomatology, prophylaxis, and treatment follow in logical sequence under each disease, with the main text in clear large type and subordinate, discursive, controversial or relevant matter of less importance in small type, such as is used for the references. These latter do not include all that are mentioned in the text, but are selected as the best or most productive for collateral reading and usually include one or more major articles of the year of publication, 1944.

Balance, sense of proportion, freedom from extreme or eccentric attitudes, fairness in presenting conflicting or opposite opinions, and data still disputed on matters of etiology, treatment and epidemiology, characterize the text throughout. Particular emphasis is given to preventive, environmental, administrative and social aspects of "diseases which occur commonly or most frequently in tropical countries, although many of them are encountered from time to time, and some are even endemic in countries with temperate climates."

To the epidemiologist of today, the paragraphs under this heading will appear too limited in scope and subject matter for entire satisfaction, but a

little hunting under the headings of history, distribution, and prevalence usually reveals the information commonly dealt with under epidemiology.

It must be assumed that both author and publisher were under unusual pressure of the international military emergency to get the rewritten text in print and circulation among the medical officers of our own forces in particular. Only such presumption of need for haste can excuse the considerable number of errors of expression and spelling in the text. Proofreading has been inadequate for a good level of scholarship. Even a reviewer lacking time for the reading of every line or page discovers such lapses as: "This ratio was especially probably due to the fact . . ." (p. 343); succrose, which needs but one c (p. 566); "serum of tubercular subjects," when the adjective tuberculous is correct (p. 792); "bacterial infection of food and drink," when pollution or contamination should have been used (p. 582); *Frascatoro* for Fracastoro (p. 927). Under arcariasis "The most severe injections are encountered" referring to infections, p. 1221; L. oa. instead of Loa loa, p. 1337; kerosene immersion instead of emulsion, p. 281; Carribbean instead of Caribbean, p. 1253; neoartic instead of nearctic when referring to the mosquito *A. triseriatus* (p. 881). In referring to 180 species of anopheles "only about 60 have been incriminated of transmitting human malaria," a crude and improper use of our language.

Fastness with respect to chemotherapeutic drugs is referred to under Kala azar, but in subsequent editions the reader will expect something more basic on this very important problem of selective specific therapy.

With all the meticulous exactness as to authorship and date and place of publication of the many references, it is surprising that when the cholera epidemic in London related to the famous Broad Street pump is dealt with, Wm. Snow receives no mention or credit (p. 609).

In dealing with marihuana (p. 1202), the author follows the traditional teaching which may still be correct in the tropics, rather than the observations of pharmacologists and psychiatrists with experience in cities of U.S.A.

The volumes are sturdy, the paper and printing good, the illustrations mostly of high quality and useful to the teacher, the index, although not extensive, is adequate and its appearance in both volumes a real convenience. There is probably more factual, authoritative, immediately useful information per page in these two volumes on the diseases dealt with than can be found elsewhere.

HAVEN EMERSON

A Digest of the Literature on DDT—*By R. C. Roark and N. E. McIndoo. Washington: U. S. Department of Agriculture,* 1944. *Publ. No. E-631.* 53 pp.

The authors, working at the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture, have abstracted the information contained in the 174 publications listed in a bibliography on DDT that was issued in June, 1944. This remarkable product, which was synthesized by Zeidler in 1874, seems not to have been mentioned in the literature until 1942, when a British patent was issued on its production. Since that time the very wide notice which the product has had in the literature makes such a digest exceedingly useful.

According to this review, the insecticidal action of DDT is not universal; that is, while it is highly toxic to many species of insects, it is relatively nontoxic to others. The studies are by no means complete. Meantime this digest of the literature will be highly useful to interested persons.

REGINALD M. ATWATER

Trichinosis—*By Sylvester E. Gould, M.D., D.Sc. Springfield, Ill.: Thomas,* 1945. 322 pp., illus. Price, $5.00.

This volume is no doubt an outgrowth of the author's own investigations and the increased interest in the public health aspects of this disease. The subject matter is divided into thirteen chapters dealing respectively with the history of the disease, the life cycle, its morphology and epidemiology, of trichinosis in lower animals, pathology, immunology, laboratory diagnostic methods, symptomatology, diagnosis, treatment, prognosis, and control. An extensive bibliography is included, while the 128 illustrations are excellently reproduced. Dr. Gould has drawn heavily on the literature for his information. This is of value for reference purposes but one wishes at times that he might have interpreted more of the data.

The excellence of the work leaves little opportunity for criticism. It would have added much of local interest if the epidemiology of the disease in the United States had been discussed at greater length. Likewise, the occurrence of clinical trichinosis in other countries is treated rather sketchily. The chapter on morphology, while adequate for the public health worker, would hardly satisfy the nematologist.

Since the book is suggested as being of interest to the veterinarian, swine grower, and meat packer, a discussion of the effect of trichina larvae of various methods of curing and smoking, particularly as related to meat inspection requirements, would have been of value. In connection with diagnosis, considerable emphasis is placed on the occurrence of subungual hemorrhages. It seems probable, however, that such hemorrhages do not occur in anything like 60 to 70 per cent of clinical cases. In fact, they were encountered in only 2 of 391 cases in an outbreak observed by the reviewer. Dr. Gould recommends the use of a 1:100 dilution of antigen in the precipitin test, whereas experience indicates that the single tube method is deficient and may give misleading results. A more efficient procedure involves the employment of antigen dilutions varying between 1:60 and 1:1,280 or higher.

Issue might be taken with points of a more minor character, but the book is unusually free from error. It is the first good monograph on trichinosis since that of Stäubli in German in 1909 and should be of great value as a reference book to all who have occasion to deal with the subject.

WILLARD H. WRIGHT

Stream Sanitation — *By Earle B. Phelps. New York: Wiley,* 1944. 276 pp. Price, $3.25.

Professor Phelps' book is of timely interest, because of the serious problems of stream pollution and its control with which the country will be faced after the war. As noted in the preface of the book, its subject material has been drawn largely from the studies carried out at the Cincinnati Station of the U. S. Public Health Service during a period of about 20 years beginning in 1914, when the work at that station was devoted mainly toward developing and elucidating the fundamental principles which underlie the pollution and natural purification of streams. The author has drawn a considerable amount of data from other sources as well, and has interpreted both these and the Cincinnati Station data from the standpoint of his own thought and experience on the subject.

In successive chapters, the book discusses the life history of a stream, the biology of growth and decay, the aerobic and anaerobic decomposition of sewage, the oxygen balance in polluted streams, and the public health aspects of bacterial pollution. The book closes with a chapter on stream microbiology

by Dr. James B. Lackey, Senior Biologist at the present Cincinnati Station of the Public Health Service.

The author's treatment of the subject is essentially fundamental in nature, especially as regards the phenomena associated with stream self-purification, to which a large portion of the book is devoted. Applications of theory and mathematical formulas are illustrated by ingenious examples and analogies, which lend added value to the book as a teaching medium. Although it is not, nor does it pretend to be, a comprehensive treatise on the subject, it has brought together in very readable form a large amount of basic information previously available only from manifold published sources. H. W. STREETER

Bibliographie d'Hygiene Industrielle—*Washington, D. C.: International Labour Office,* 1944. 167 pp. Vol. XIV. Price, $1.50.

The latest contribution by the International Labour Office on industrial hygiene is a bibliography on this subject consisting of 2,620 references. These are intended to cover the literature on industrial hygiene for the year 1940, and are clear proof of the activity, interest, and rapid growth in this field.

It is unfortunate that this material is nearly five years old, since in an activity as dynamic as industrial hygiene many of the references are already old. This is especially true with regard to such live topics as the employment of women in industry and the exposures to some of the chemicals encountered in war industries.

The material is treated under such headings as physiology; industrial pathology; pathology by causes of injury by various substances such as metals, gases, vapors, infections, etc.; special pathology such as the dermatoses and silicosis; traumatic surgery; general hygiene; and social medicine and hygiene. In the reviewer's opinion, the references could have been classified in a much simpler fashion, and were it not for the excellent author and subject index it would be somewhat difficult to find the desired references. Nevertheless, this volume is a distinct contribution to the literature on industrial hygiene, and should be of considerable aid to all those actively engaged in this field.

J. J. BLOOMFIELD

And Now to Live Again—*By Betsey Barton. New York: Appleton-Century,* 1944. 150 pp. Price, $1.75.

Frequently the public health worker is distressed by the fact that the patient group with and for whom a part of his work is attempted is unresponsive. Apparent apathy, indifference, even resistance may be encountered. We are unlikely to replace these reactions with acceptance and coöperation until we know what goes on in the mind of the patient.

In this slender book, an unusually articulate patient presents a candid chronicle of her depression and frustration for years immediately following an accident which resulted in extensive spinal injury, and of her ultimate conquest of some of the problems of the disabled. Despite haphazard organization of material, the essential values of the story hold the reader's interest forcibly and steadily. The author has supplemented autobiographical material by faithful and frequently skillful reporting upon the progress of others in overcoming the handicaps imposed on them by physical disability. She achieves an ultimate continuity of inquiry into why one person persists and another gives up in the struggles for recovery and readjustment. She portrays not only what stimulated her own determination but factors which have encouraged some others.

The book may be recommended particularly to the clinician, the nurse, and

the medical social worker as a helpful interpretation of material seldom made articulate or accessible.

HOLLAND HUDSON

Postwar **Planning in the United States: An Organization Directory**—*New York: Twentieth Century Fund*, 1944. 134 pp. Price, $1.00.

This Directory is the third in a series of surveys made by the Twentieth Century Fund, revealing that these postwar planning groups have increased from 105 in 1942 and 137 in 1943 to nearly 200 in 1944. Thirty-nine are government and 158 are private agencies. Seventeen of the total are in the welfare and health group. A brief digest is presented of the background, activities and personnel now engaged in postwar planning under each agency. The Directory can be recommended for its inclusive character. Each agency doing postwar planning should be aware of other agencies concerned with the same field.

REGINALD M. ATWATER

Aerobic, **Non-sporing, Excretal** Bacteria: *A Synoptical Table of Biochemical Characters Arranged in Terms of Manipulative Procedure—By Arthur Compton, M.D. Egypt: C. R. Soc. Med. et Hyg. Trop. d'Egypte*, v. 8, 1943. 27 pp. and table.

The table presents the cultural characteristics of 235 different species of aerobic, non-sporing, Gram-negative bacilli or coccobacilli in terms of fermentation characteristics in nine substrates, motility, gelatin liquefaction and action in milk media. These are divided into six groups; salmonella, faecalis alkaligines, dysentery, metadysentery, coliform and a group showing "mixed fermentations," labeled "giumaiform." The table is so arranged that three manipulative stages; enrichment, plating on Endo medium and transfer of individual colonies to six simple broth media will supply the basic information for group separation. Additional manipulative stages are suggested for further differentiation and for study of phage-susceptibility and plaque formation.

In the accompanying text the author discusses the advantages of using such a table, points out some of the difficulties attending any method of classifying these organisms, mentions some technical refinements and recommendations, and warns against the use of agglutination reactions for accurate identification until more complete serological studies of the entire group have been made and mono-specific sera are more readily available.

Over 100 new strains of bacteria isolated from feces in the Central Municipal Laboratory at Alexandria between 1926 and 1943, all phage-susceptible, representing well defined biochemical and serological entities not described previous to isolation, are listed in the text and included in the table as "Alexandria" strains. Whenever possible, cross-reference is made in the table to names assigned similar strains by other authorities.

On the whole, this method of classification, stressing biochemical reactions and phage-sensitivity, differs from American practice, but the wealth of information in this comprehensive table and study offers much to interest any student of this complicated problem.

EDMUND K. KLINE

Mitchell's Pediatrics and Pediatric Nursing—*Revised by Robert A. Lyon, M.D., and Winifred Kaltenbach. (2nd ed. rev.) Philadelphia: Saunders*, 1944. 504 pp., 97 illus. Price, $3.00.

"Miss Jones, massage bed 8 for the night." Twenty years ago such orders were commonly heard in the wards of busy hospitals. Times and techniques have changed and this second edition of Dr. A. Graeme Mitchell's text gives

evidence of the healthy change over the years in the methods of teaching the student nurse. The student nurse who uses this book as her text in pediatric nursing will not be expected—as of old—to do or die and not to reason why.

The authors have divided their work into six units: Normal Growth and Development, Nutrition, Children in the Home, Children in the Hospital, Abnormalities and Diseases, and Child Care in the Community. The student is first introduced to the normal growth, development and behavior of the average child as we find him in his home environment before she studies the abnormalities and diseases of childhood and the necessary nursing care and procedures involved. Throughout, the authors emphasize the importance of understanding the child as an individual as well as understanding his disease. This emphasis is highlighted by practical, sound suggestions illustrating methods the nurse can use in the hospital to help gain the child's coöperation for his treatments and to help him keep occupied through a happy convalescence.

The unit on Children in the Hospital stresses the responsibility the student nurse must assume in being alert to and using every opportunity to assist the child to adjust to the strange environment of the hospital. The student nurse is reminded constantly that the child should be prepared for whatever treatment or procedure may follow by explanations and reasons commensurate with his understanding.

In discussing behavior problems the point is made that " the nurse should think of him more as a child with a problem than a problem child." Also " the child who may be shy, impudent or otherwise unattractive, should challenge the nurse's ingenuity in learning the causes of his difficulty. . . ."

In teaching the various nursing procedures, the objectives to be gained and the reasons for the particular methods used are stressed rather than the slavish following of standard techniques. It is refreshing, indeed, to read a text prepared for student nurses which takes for granted that nurses must learn to think, feel, and analyze, as well as to " do " as ordered. It is to be regretted, however, that the authors did not give more specific illustrations to keep the student nurse alert to opportunities of teaching personal and public health through her everyday procedures and contacts with her patients and their parents.

In several instances the authors have been far more optimistic than actual situations would warrant. For instance: "At present, the standards of milk production and distribution required by most boards of health are such that almost all market milk is safe." Or this statement: " Most hospitals now have the help of social service or visiting nurse departments which may arrange for the child's care at home." Alas, 'tis not so in either case as those of us in the wide open spaces so well know.

On the whole, this text should prove valuable to student nurses, not only for its content material on pediatrics, but because of its over-all suggestions concerning human relationships and attitudes of children, parents, and nurses in home and hospital.

HENRIETTA LANDAU

Clinical Practice in Infectious Diseases for Students, Practitioners and Medical Officers—*By E. H. R. Harries, M.D., and M. Mitman, M.D., with a foreword by W. Allen Daley, M.D. (2nd ed) Edinburgh: E. & S. Livingstone,* 1944. 570 pp. Price, $6.00.

This book from Scotland is intended for students, practitioners, and medical officers, and is indeed an exceptionally valuable book for any medical person.

Besides chapters on the usual common contagious diseases, and some less common ones such as psittacosis and

infective jaundice, but omitting others such as influenza, tuberculosis, pneumonia, and the venereal diseases, it also has a number of chapters on diagnosis in general, on the transmission and on the control of infectious diseases, and several on their management. The descriptions are clear and succinct, the charts and tables are helpful, and there is a great deal of authentic information not usually found in such books.

There are a few points at which, at least according to an American viewpoint, the book might be made still better. It perhaps went to press before much was known about the use of gamma globulin for the prevention of measles, or of hyperimmune serum for the treatment of whooping cough, but it might at least mention human convalescent serum for scarlet fever. On page 70, the colored chart of schematic drawings of four rashes is not good and should be replaced by colored photographs of actual conditions. In measles the congestion and swelling of the caruncles and semi-lunar folds in the inner corner of the eyes are not mentioned. On page 334, we are all told it is wise to isolate a poliomyelitis patient four weeks; on page 338, three weeks is given as the isolation period.

The chapter on poliomyelitis is perhaps the least perfect from the American viewpoint. There is no mention of muscle shortening, spasticity, or spasm —except the statement that there is stiffness of the neck and spine in the meningeal phase. Under treatment early immobilization is advocated, and we are told we must put patients in a respirator as soon as respiratory paralysis is suspected. In a one-paragraph mention of Sister Kenny on page 336, no true conception is obtained of the present-day Kenny treatment, and the use of baths is actually included as part of her procedure. The authors are probably familiar only with her earlier writings.

On the whole, however, this is a remarkably useful and valuable book, and one highly to be recommended to any student of infectious diseases.

PHILIP M. STIMSON

Sex in Marriage—*By Ernest R. Groves and Gladys Hoagland Groves. (3rd ed.) New York: Emerson*, 1943. 224 pp. Price, $2.00.

The recently revised edition of *Sex in Marriage*, by Dr. and Mrs. Groves, carries sound advice to young men and women about to be married. It limits, with intent, its discussion of happiness in marriage to a consideration of the sex factors involved. It seeks to make the early days, weeks, and months of marriage more satisfying through a clearer understanding on the part of husband and wife of the rôle wholesome sex expression may play in their life together. This book will be particularly helpful for young people with conventional ideas about sex; for them, and particularly for the young girl, the authors develop, in frank and explicit discussion, concepts of the wholesomeness of sex interest and sex expression. This book, in its first edition, was one of the many books which appeared some fifteen years ago when an interested public was suddenly swamped with books on "sex technique." The Groves' exposition was then, and is today, a sound and careful analysis of adult sex life for naturally concerned and questioning young people.

When the Groveses again revise their important book, this reviewer has two suggestions to make. First, it might be wise to change the emphasis of the chapter entitled "The Background" from the self-questioning it encourages to a more generalized discussion of what our culture has done to us individually in laying down the patterns and overtones of our thinking and our expression in sex. In this way the "morbid reaction" the authors so frequently

mention and inveigh against could be more surely avoided and the lessons to be learned from this book could become even more useful.

Secondly, this reviewer would welcome some discussion by Dr. and Mrs. Groves on war and marriage. Surely they have case material on hand to give us important suggestions on how to stabilize the relationship of two people whose married life has been drastically interrupted by the war. No doubt they also have suggestions on how young people may prepare for the reaction to over-idealization of one another which is almost inevitable as a result of separation. These are problems of the moment which we may not neglect.

MARY S. FISHER

Housing Yearbook—*By the National Association of Housing Officials. Chicago: NAHO,* 1944. 176 pp. Price, $3.00.

The National Association of Housing Officials has published its tenth successive yearbook covering this past year's housing activities in the United States. An article by the editors summarizes and evaluates these programs. They point out that one of the most significant moves of the federal government has been the consolidation during 1942 of all Federal Housing activities under the National Housing Agency. The NHA has been notably successful in coördinating all housing construction best to serve production and man power mobilization for the war effort. The authors urge that such coördination is needed in the post-war period.

Several bills to provide federal aid for urban redevelopment and planning were proposed in Congress and, while there was considerable committee discussion, no action was taken during the year. Committee discussions will be resumed shortly.

The New York Court of Appeals ruled that the New York Redevelopment Companies' law is constitutional but the Illinois Circuit Court law has ruled that the Illinois law is unconstitutional.

Federal action on appropriations and determination of policies to permit federal housing agencies to engage in preparation for the post-war period and on the relationship of public housing to urban redevelopment is needed to stimulate and make possible local planning. A plea was voiced urging local housing authorities to assume local responsibility and leadership in the formulation of overall housing programs in their respective communities.

The work of the four major Federal Housing agencies is reviewed by the administrators of each of these agencies. The year's activities were mainly in housing production under wartime restrictions and priorities.

The Directory of Housing agencies which has been a part of this yearbook from the beginning is again included. This is the only up-to-date directory of all known official and unofficial housing agencies published. Public health officials and workers interested in housing should read and have as a reference this valuable outline of the past year's housing activity in this country.

ALFRED H. FLETCHER

Borderlands of Psychiatry—*By Stanley Cobb. Cambridge: Harvard University Press,* 1944. 166 pp. Price, $2.50.

Dr. Cobb has undertaken to explore a marginal area in which he estimates there are about six million citizens—some 1,600,000 alcoholics, 1,200,000 stammerers, 650,000 epileptics, 600,000 with other neurological disorders, and at least 2,500,000 psychoneurotics. This frontier land, Dr. Cobb points out, like most borderlands, has been despised and disputed territory. Guided by the facts of neuro-anatomy, physi-

ology, and pathology in his explorations, the author never loses his way in the complex fields of speech, emotion and consciousness. By this scientific approach, Dr. Cobb places these subjects on a firmer foundation and provides a clearer understanding about the millions dwelling in this border region.

In addition to the subjects already mentioned, there are excellent, concise chapters on psychosomatic medicine, epilepsy, and psychoneurosis. Case histories are made clearer by ingenious charts, and understanding of complex functions of the brain and nervous system are made more intelligible by simple diagrams.

This book will be appreciated by anyone who seeks better understanding of the mind. It should be an invaluable book for those public health workers who wish to understand the people that they serve. They will find it helpful even in understanding themselves. GEORGE M. WHEATLEY

A Basic Plan for Health Education and the School Health Program (80 pp). **A Basic Plan for Student Health and Health Education in Teacher Training Institutions** (40 pp.)—*Prepared by the Illinois Joint Committee on School Health. By authority of the State of Illinois, Dwight H. Green, Governor.* 1944. Free on request.

It is highly refreshing to pick up two related reports on school health and health education, and on health in teacher training institutions which are the result of coöperative labors of a widely representative group of workers in a state in the fields of education, medicine, public health, and volunteer services. The two reports under question are the product of just such a comprehensive undertaking in the State of Illinois during the school year 1943–1944. With the consultation services of Dr. Clair E. Turner, the work represented by these reports was carried on by a Joint Committee of School Health under the combined leadership of the three departments of state government most directly concerned, namely, public education, teacher training, and public health.

Both reports are intended to serve as guides to local groups in planning their own programs in line with local needs. They suggest, rather than dictate plans of action. In each report one finds outlined the elements of a comprehensive program, and in each are practical suggestions on organizing for program planning which should be of great aid to community groups. The report for the elementary and secondary schools contains a helpful list of underlying principles relating to administration, educational procedures, and coöperative relationships, and then proceeds to outline specific objectives in terms of pupil achievement in the various aspects of health. Sections also are devoted to the organization of the student day in the interest of mental and physical health, a healthful school environment, school health services, the health of the teacher and other school employees, and in-service training of teachers.

The report for teacher training institutions treats separately the student health service, a hygienic regimen, instruction in health and in health education, and in-service training for teachers. The broadside attack in both reports on the important problem of in-service training of teachers in health and health education should be of real value in strengthening efforts to meet this much neglected problem.

On the Joint Committee were representatives of twenty-nine agencies whose activities touch upon nearly every angle of child health and teacher education. Approximately one hundred people served on the committees that prepared the different parts of these

reports. This wide participation is significant and should bring rich dividends in interest and leadership as the report is implemented by local experimentation and action. It is hoped that these reports may be followed by supplementary accounts of local accomplishments which have been outgrowths of this commendable state-wide study.

RUTH E. GROUT

The Wounded Get Back—*By Albert Q. Maisel. New York: Harcourt Brace,* 1944. 230 pp. Price, $2.50.

Normal Lives for the Disabled—*By Edna Yost in collaboration with Lillian M. Gilbreth, Ph.D. New York: Macmillan,* 1944. 298 pp. Price, $2.50.

Jobs for the Physically Handicapped—*By Louis Neuschutz. New York: Bernard Ackerman,* 1944. 240 pp. Price, $3.00.

Public health workers dealing with soldiers, veterans, or relatives of either will find it rewarding to become acquainted with all three of these books. They present information which not only has intrinsic and general interest but which also has a special value for people who have become immediately concerned with the problems of the disabled.

The Wounded Get Back, the most popularly written of the books, is exciting reading. The author spent six months in the South Pacific traveling in planes, warships, hospital ships, and jeeps. He talked with wounded servicemen and medical personnel in practically every type of hospital operated by the Navy. He had the opportunity to observe at first hand the Navy's Medical Department in action at sea and on land, and reports what he saw with intelligence and vividness. Placing the book in the hands of the wife, relative, or friend who is concerned about the medical treatment our men are receiving should do much to expell his or her worry.

The other two books are useful in much the same way but are especially intended for the family of a veteran who has become physically handicapped, for the veteran himself, or as a matter of fact, for any disabled person.

If both are recommended to orient the disabled person or his family it would seem advisable to suggest that *Normal Lives for the Disabled* be read before *Jobs for the Physically Handicapped.* The former book should be of great help in laying a general foundation for the basic adjustment of a disabled individual. In addition to offering helpful suggestions for selecting a vocation, preparing for a job, locating a job, and succeeding in a job, the book discusses such topics as benefits, artificial appliances, and therapies.

Jobs for the Physically Handicapped offers valuable information with regard to the kinds of work that people with various types of physical handicaps can do and have done. Unusual and interesting examples in the form of case histories are presented. LOUIS LONG

BOOKS RECEIVED

APPROVED LABORATORY TECHNIC. Clinical Pathological, Bacteriological, Mycological, Virological, Parasitological, Serological, Biochemical and Histological. By John A. Kolmer, M.D., and Fred Boerner, V.M.D. New York: D. Appleton-Century, 1945. 4th ed. 1017 pp. Price, $10.00.

BACTERIOLOGY AND ALLIED SUBJECTS. By Louis Gershenfeld, D.Sc. Easton: Mack, 1945. 561 pp. Price, $6.00.

THE CIVILIZED DISEASES: YOU CAN CURE THEM. By Boris Sokoloff. M.D. New York: Howell, Soskin, Publishers, 1944. 309 pp. Price, $2.00.

THE COMMON COLD AND HOW TO FIGHT IT. By Noah D. Fabricant, M.D. New York: Ziff-Davis, 1945. 107 pp. Price, $1.50.

THE CONTROL OF COMMUNICABLE DISEASES. An Official Report of the American Public Health Association. New York: The American Public Health Association, 1945. 6th ed. 149 pp. Price, $.35.

CRIME AND THE HUMAN MIND. By David Abrahamsen, M.D. New York: Columbia University Press, 1944. 244 pp. Price, $3.00.

DIRECTORY OF SOCIAL AGENCIES OF THE CITY OF NEW YORK, 1944–1945. Prepared under the direction of the Committee on Information Services of the Welfare Council. New York: Columbia University Press, 1944. 366 pp. Price, $4.00.

EMPLOYMENT OPPORTUNITIES IN PUBLIC HEALTH. Coöperatively prepared for Employment Counselling Agencies by the Committee on Professional Education of the American Public Health Association and the United States Public Health Service. New York: A.P.H.A., 1945. 30 pp. Free from publisher, 1790 Broadway, New York 19, N. Y.

AN INTRODUCTION TO ANIMAL BIOLOGY. By John B. Parker, Ph.D., and John J. Clarke, Ph.D. St. Louis: Mosby, 1945. 2nd ed. 532 pp. Price, $3.75.

MALARIA IN THE UPPER MISSISSIPPI VALLEY, 1760–1900. By Erwin H. Ackerknecht. Supplements to the bulletin of the History of Medicine. No. 4. Baltimore: The Johns Hopkins Press, 1945. 142 pp. Price, $2.00.

THE MARCH OF MEDICINE. The New York Academy of Medicine Lectures to the Laity, 1944. New York: Columbia University Press, 1945. 121 pp. Price, $1.75.

MASS MINIATURE RADIOGRAPHY OF CIVILIANS. For the Detection of Pulmonary Tuberculosis. Guide to Administration and Technique with Mobile Apparatus using 35-mm. Film: and Results of a Survey. By Kathleen C. Clark, P. D'Arcy Hart, Peter Kerley and Brian C. Thompson. Medical Research Council Special Report Series No. 251. London: His Majesty's Stationary Office, 1945. 135 pp. Price, $.90.

MEN OF SCIENCE IN AMERICA. The Rôle of Science in the Growth of Our Country. By Bernard Jaffe. New York: Simon and Schuster, 1944. 600 pp. Price, $3.75.

PRACTICAL OCCUPATIONAL THERAPY FOR THE MENTALLY AND NERVOUSLY ILL. By Louis J. Haas. Milwaukee: The Bruce Publishing Company, 1944. 432 pp. Price, $6.00.

PROCEEDINGS OF CONFERENCE ON RHEUMATIC FEVER. WASHINGTON, D. C. OCTOBER 5–7, 1943. United States Department of Labor. Children's Bureau Publication 308. Washington, D. C.: Supt. of Documents, 1945. 135 pp. Price, $.20.

STATE PROGRAMS FOR CARE OF CHILDREN WITH RHEUMATIC FEVER. Under the Social Security Act, Title V, Part 2. United States Department of Labor. Children's Bureau. Washington, D. C.: United States Department of Labor. Children's Bureau, 1944. 10 pp. Free from publisher.

PUTTING THE DISABLED VETERAN BACK TO WORK, II. A further panel discussion by C. D. Selby, M.D., Col. John N. Andrews, Harley L. Krieger, M.D., A. A. Hendrix, I. Dent Jenkins and Benjamin F. Streets, M.D. Special Series, Bulletin No. 3. Pittsburgh: Industrial Hygiene Foundation, 1944. 33 pp. Price $.25.

SICKNESS INDEMNIFICATION. A panel discussion by R. A. Hohaus, Andrew T. Court, W. M. Gafafer, D.Sc., Nathan Sinai, Dr.P.H. Transactions Series, Bulletin No. 1. Pittsburgh: Industrial Hygiene Foundation, 1944. 55 pp. Price, $.50.

RELIEF AND REHABILITATION. A Study Guide. Prepared for the National Planning Association by Spencer Coxe. Washington, D. C.: National Planning Association. 12 pp. Price, $.15.

SPANISH SUMMARY OF THE 8TH EDITION (1941) OF STANDARD METHODS FOR THE EXAMINATION OF DAIRY PRODUCTS. A.P.H.A. New York: A.P.H.A., 1945. 52 pp. Free to Latin American Countries. Price, $.10 in the United States.

A TEST FOR COLOR BLINDNESS. By P. B. Wiltberger, M.D. Columbus: College Book Company, 1944. 6 pp. Price, $1.00.

TRANSACTIONS OF THE NEW YORK ACADEMY OF SCIENCES. Section of Geology and Mineralogy. New York: New York Academy of Sciences, 1944. 56 pp. Price, $.25.

THE TREND OF SYPHILIS IN CLEVELAND, OHIO, AS INDICATED BY SEROLOGICAL TESTS ON REGISTRANTS AT PRENATAL CLINICS. By Huldah Bancroft, Ph.D. Cleveland: The Joint Social Hygiene Committee of the Academy of Medicine and the Cleveland Health Council, 1945. 13 pp. Free from publisher, 1001 Huron Road, Cleveland, Ohio.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Does Knowledge Prevent Illness?—Then why is the average lease of the doctor's life less than that of the general population? asks the Medical Officer editorially. Noting that the clergy stand near the top of the mortality table, the question of piety is gingerly considered. Is the practice of medicine unhealthy? It is interesting, not too fatiguing, though it too often entails irregular meals and sleep.

ANON. The Health of Medical Practitioners. M. Officer. 73, 2:9 (Jan. 13), 1945.

9000 Questions at Work—Our Canadian brethren are told how our Merit System Unit works, what it is doing, and what it hopes to do in developing diagnostic instruments for the selection of public health personnel.

ATWATER, R. M., and LONG, L. D. New Methods for the Selection of Public Health Personnel. Canad. Pub. Health J. 36, 1:1 (Jan.), 1945.

More Than Good Intentions Needed — Rehabilitation being on every tongue these days, this symposium will add some red meat to the rather insubstantial fare that is currently being served up to us.

BENDER, R. G., *et al.* Rehabilitation and the Returning Veteran. Mental Hyg. 29, 1:1 (Jan.), 1945.

A Job With a Future—This presentation of the possibilities in rehabilitating the war wounded may prove meaningful to health administrators, for people other than disabled veterans—the tuberculous, for instance—are in need of rehabilitation services. Is it the job of public health to meet this need?

DYNES, J. B. Rehabilitation of War Casualties. War Med. 7, 1:32 (Jan.), 1945.

After the Mass Surveys, What?—In the last ten years about 2,500,000 New Yorkers have had chest x-rays and about 2 per cent revealed lesions of clinical significance. As there is no excuse for mass surveys unless something is done about follow-up, this paper tells how New York has tried to meet its obligations.

EDWARDS, H. F. The Place of the Mass Survey in the Tuberculosis Control Program. New York State J. Med. 45, 3:269 (Feb. 1), 1945.

Ginger for a Snail—At the present rate of progress in developing full-time county health service it will take more than a hundred years to cover our nation. What is being done to accelerate the pace is the theme of this paper: one you should read.

EMERSON, H., and ATWATER, R. M. National Health Based on Local Health Units. J.A.M.A. 127, 7:374 (Feb. 17), 1945.

From a Solitary Laboratory Bench—Those who like to go back to first sources will surely want to read this story of the discovery and development of penicillin by the fellow who did it. One cannot help marvelling at the lag which occurred between the reporting and the utilization of his astounding observation.

FLEMING, A. Penicillin—Its Discovery, Development, and Uses in the Field of Medicine and Surgery. J. Roy. Inst. Pub. Health & Hyg. 8, 2:36 (Feb.), 1945.

Brother's Keepers, Inc.—In San Antonio, an excessively high prevalence of tuberculosis was found among the Latin-Americans and this high rate was shown to have an unfavorable influence upon the Anglo-Americans.

GOULD, D. M. Mass X-ray Survey in San

Antonio. Pub. Health Rep. 60, 5:117 (Feb. 2), 1945.

We **Can If We Will**—Objective: eradication of tuberculosis. Plan: chest x-ray of everyone, susceptible groups first; periodic examinations of inactive cases; prompt treatment of all open cases; intensified health education; financial aid to tuberculous bread-winners.

HILLEBOE, H. E. Outlook for Tuberculosis Control. Med. Rec. 157, 12:733 (Dec.), 1944.

This **Will Be No Surprise to You**—These findings that the situation is poor with respect to health practices in interscholastic athletics in Illinois, will apply to many states, it seems safe to assume.

JACKSON, C. O. An Evaluation of Health Practices in Interscholastic Athletics for Boys in Illinois. Res. Quart. 15, 4:303 (Dec.), 1944.

Ephedrine, **Benzedrine, *et al.***—There are nationally distributed at least 240 different nasal vasoconstrictor compounds in the form of drops, sprays, inhalants, and ointments. The widespread use of this galaxy of medicaments brings the subject close to the field of public health. Anyway, you will want to be reminded about this article, the moral of which seems to follow the Gilbertian advice, "What, never? Hardly ever."

KELLY, B. M. The Use and Abuse of Nasal Vasoconstrictor Medications. J.A.M.A. 127, 6:307 (Feb. 10), 1945.

Mental and Emotional Deficiencies—Here in a nutshell, is one indigestible nut: "Most mothers, sensing the fact that something is not just right, blindly blame the tonsils, eyes and ears and often request that a tonsillectomy be done right away." What should be done instead of the tonsillectomy is the burden of this excellent paper.

POWERS, G. F. School Health Problems as Seen in a Pediatric Clinic. Am. J. Nurs. 37, 1:7 (Jan.), 1945.

When to Begin?—If two-thirds of the deaths from pertussis occur before the child is a year old, and it requires some months for immunity to develop after vaccination, when should the immunization be begun? This paper suggests that it may be begun earlier than formerly recommended.

SAKO, W., *et al.* Early Immunization Against Pertussis With Alum Precipitated Vaccine. J.A.M.A. 127, 7:379 (Feb. 17), 1945.

It's About Workers' Eyes—Being parts of a seminar on the industrial aspects of ophthalmology and emphasizing the need of an adequate eye conservation program, the dearth of industrial ophthalmologists, and the necesssity of teaching the subjects in medical schools, these seven papers will be combined with others to be published in book form soon—and are mentioned here just in case you are desirous of knowing the latest ideas in this field.

TOWNSEND, J. G. Importance of Industrial Hygiene. Sight-Saving Rev. 13, 4:219 (Feb.), 1945.

Interesting, If True — Mexican children exposed to siblings with whooping cough seemed to be protected against infection if they were treated with alum-precipitated *diphtheria* toxoid. Of 61 children unquestionably exposed, all but 4 (93.4 per cent) escaped the disease.

TURNBULL, J. M. Alum-Precipitated Diphtheria Toxoid for Inoculation of Persons Exposed to Whooping Cough. Am. J. Dis. Child. 69, 1:5 (Jan.), 1945.

ASSOCIATION NEWS

SUSTAINING MEMBERS

The By-laws of the Association provide that "Individuals or corporations interested in public health may be elected to Sustaining Membership." The following organizations evidence their interest in and support of the objectives of the Association through their Sustaining Membership:

American Bottlers of Carbonated Beverages, Washington, D. C.
Ames Company, Inc., Elkhart, Ind.
The Borden Company, New York, N. Y.
The Chlorine Institute, Inc., New York, N. Y.
Clay-Adams Co., Inc., New York, N. Y.
Difco Laboratories, Inc., Detroit, Mich.
The Diversey Corporation, Chicago, Ill.
Economy Manufacturing Company, Chattanooga, Tenn.
Equitable Life Assurance Society, New York, N. Y.
Fuld Brothers, Baltimore, Md.
Hoffmann-LaRoche, Inc., Nutley, N. J.
Holland-Rantos Co., Inc., New York, N. Y.
International Assn. of Ice Cream Manufacturers, Washington, D. C.
International Equipment Company, Boston, Mass.
John Hancock Mutual Life Insurance Co., Boston, Mass.
Lederle Laboratories, Inc., New York, N. Y.
Life Insurance Company of Virginia, Richmond, Va.
Lily-Tulip Cup Corporation, New York, N. Y.
The Macmillan Company, New York, N. Y.
Mr. George W. Merck, President, Merck & Co., Inc., Rahway, N. J.
Metropolitan Life Insurance Company, New York, N. Y.
National Life Insurance Co., Montpelier, Vt.
Oval Wood Dish Corporation, Tupper Lake, N. Y.
The Prudential Insurance Co. of America, Newark, N. J.
St. Joseph Lead Company, New York, N. Y.
The Sealright Company, Inc., Fulton, N. Y.
Sharp & Dohme, Inc., Glenolden, Pa.
E. R. Squibb & Sons, Brooklyn, N. Y.
Sun Life Insurance Company, Baltimore, Md.
The Travelers Insurance Company, Hartford, Conn.
Union Central Life Insurance Company, Cincinnati, O.
The Upjohn Company, Kalamazoo, Mich.
West Disinfecting Company, Long Island City, N. Y.
Western & Southern Life Insurance Co., Cincinnati, O.
Winthrop Chemical Co., Inc., New York, N. Y.

An application for Sustaining Membership has also been received from—

National Confectioners' Association, Chicago, Ill.

THE CONTROL OF COMMUNICABLE DISEASES

The publication of *The Control of Communicable Diseases*, an official report of the American Public Health Association, 6th edition, is announced.

First published in 1916, the successive editions of these standard recommendations for the administrative control of the communicable diseases have had world-wide circulation. The present report is official with the U. S. Public Health Service, the United States Navy, and has been approved in principle by the Surgeon General of the United States Army. It has been recommended for adoption as an official statement by the National Health Administration of China. Many of its sections were prepared in agreement with representatives of the Medical Staff of the British Ministry of Health. This volume is being translated into Spanish, Portuguese, French, Italian, Chinese and, possibly, Arabic.

The present edition contains 72 chapters, of which 20 are new. All the common communicable diseases are included, as well as those less frequently encountered, like the so-called "tropical" diseases.

The Subcommittee on Communicable Disease Control of the Committee on

Research and Standards of the American Public Health Association is responsible for the present text as officially approved by the Association and other agencies mentioned. The committee is composed of:

Haven Emerson, M.D., *Chairman*
Lt. Col. Gaylord W. Anderson, M.C., AUS
Captain T. J. Carter, M.C., USN
Comdr. L. T. Coggeshall, M.C.
James A. Doull, M.D.
James P. Leake, M.D.
Kenneth F. Maxcy, M.D.
Alton S. Pope, M.D.
George H. Ramsey, M.D.
Ernest L. Stebbins, M.D.

The book may be secured from the Association's Book Service. It contains 146 pages and sells for 35¢ per copy, and in quantity as follows: 1 to 24 copies—35¢ each; 25 to 99 copies—30¢ each; 100 to 499 copies—28¢ each; 500 up—20¢ each.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Ross M. Creighton, M.D., D.P.H., P. O. Box 433, Dauphin, Manitoba, Canada, Medical Director, Dauphin Health Unit

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Morris F. White, 229 E. 6th St., Pittsburg, Calif., Serologist and Bacteriologist, Camp Stoneman Hospital Laboratory

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Helen M. Nelson, R.N., Hill City, Kans., Graham County Public Health Nurse

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Epidemiology Section

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Major Wilbur Craig Mooney, 2700 Laurel St., Vancouver, B. C., Canada, Acting Director, Division of Venereal Disease Control, Provincial Board of Health

Arthur S. Webb, M.D., 129 W. Prairie Ave., Wheaton, Ill., Tuberculosis Controller, Du Page County Tuberculosis Sanatorium Board

Jose M. Zapata, Ph.D., University of Puerto Rico, Rio Piedras, Puerto Rico, Interested Citizen.

School Health Section

Alfred J. Elkins, M.D., 2629 Park Ave., Cincinnati 6, Ohio, District Physician, Cincinnati Health Dept.

Edith Gardner Mead, M.D., 73 Hooker Ave., Poughkeepsie, N. Y., Medical Inspector, Board of Education, Poughkeepsie Public Schools

Dental Health Section

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Henrietta Waters, 30 Fairmont Ave., Huntington, N. Y., Dental Hygiene Teacher, Board of Education

Unaffiliated

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Max Turteltaub, 79 Gordon St., Charleston 22, S. C., Director of Sanitation, Food and Milk Divisions, Charleston County Health Dept.

Charles H. Ziegler, 2351 S. Cloverdale Ave., Los Angeles 16, Calif., Sanitation Inspector, Los Angeles City Health Dept.

DECEASED MEMBERS

Percy de Stanley, M.D., Union, N. J., Elected Member 1931, Health Officers Section

Arthur W. Hopper, M.D., Washington, Pa., Elected Member 1939, Health Officers Section

William H. Howell, M.D., Baltimore, Md., Elected Member 1919, Unaffiliated

Pauline E. Kuehler, Whiting, Ind., Elected Member 1942, Industrial Hygiene Section

Frank L. McGahey, M.D., Grenada, Miss., Elected Member 1943, Health Officers Section

Bernard T. McGhie, M.D., Toronto, Ont., Canada, Elected Member 1936, Health Officers Section

Jesus E. Monjaras, M.D., Mexico City, Mexico, Elected Member 1891, Charter Fellow 1923, Honorary Fellow 1935, Unaffiliated

William R. Munson, M.D., Westport, Conn., Elected Member 1944, Health Officers Section

Inez Patterson, New York, N. Y., Elected Member 1944, Public Health Education Section

J. Allen Patton, M.D., Newark, N. J., Elected Member 1920, Unaffiliated

William O. Pauli, M.D., Cincinnati, Ohio, Elected Member 1930, Laboratory Section

H. R. Ross, M.D., Topeka, Kansas, Elected Member 1928, Health Officers Section

Onal A. Sale, M.D., Neosho, Mo., Elected Member 1938, Health Officers Section

Groesbeck Walsh, M.D., Fairfield, Ala., Elected Member 1937, Industrial Hygiene Section

Mortimer Warren, M.D., Portland, Me., Elected Member 1942, Laboratory Section

JOURNALS WANTED

The A.P.H.A. headquarters has exhausted its supply of June and August, 1944, issues of the JOURNAL. Any Journals for 1939 through 1944 will be welcome, and can be used. Members who can spare these issues are requested to send them (collect) to the A.P.H.A. at 1790 Broadway, New York 19, N. Y.

EMPLOYMENT SERVICE

The Association Employment Service seeks to bring to the attention of appointing officers the names of qualified public health personnel and to act as a clearinghouse on employment. This is a service of the Association conducted without expense to the employer or employee.

From the registry of persons available, selected announcements are published from time to time. Appointing officers may obtain lists of all registrants on request.

Address all correspondence to the Employment Service, American Public Health Association, 1790 Broadway, New York 19, N. Y.

Positions Available

(Supplemental to lists in recent Journals)

Wanted: Physician to plan, construct, and operate small pioneer community health center in western North Carolina, in coöperation with school and community center. Apply **Box F,** Employment Service, A.P.H.A.

Wanted: Bacteriologist with equivalent rating of junior grade, A.B. or B.S. degree and at least 1 year's experience in public health laboratory to work in county laboratory acting in capacity of state branch laboratory. Permanent position, salary $150 per month. Apply Health Department, P. O. Box 151, Arlington, Va.

Eastern city Tuberculosis and Health Association seeks woman for health education secretary with training and experience in modern methods of organizing and conducting health education among adult groups including Negro and labor in county of about 175,000, equally divided between urban and rural. Office is located in capital of state which is a large business center. Good salary and allowance for auto expenses. State age, training, positions held, and give references. Apply **Box T,** Employment Service, A.P.H.A.

Health Educator Wanted immediately. Salary to start $3,000 plus travel expense or car furnished. Applicant must have at least bachelor's degree with some specialized training in health education. Experience is desirable. Apply E. E. Palmquist, M.D., King County Health Officer, 402-L County-City Bldg., Seattle 4, Wash.

Wanted: Epidemiologist who will also serve as registrar of vital statistics. Epidemiological services involve investigations of outbreaks of disease and compilation of medical, morbidity and mortality statistics. Applicant must be qualified M.D. Salary $3,600. Apply **Box G,** Employment Service, A.P.H.A.

Physician Wanted immediately for position of assistant health officer to direct maternal and child health program. Man or woman physician with pediatric or public health training preferred. Position permanent. Travel expenses paid or car furnished. Salary $5,460 to start. Apply E. E. Palmquist, M.D., King County Health Officer, 402-L County-City Bldg., Seattle 4, Wash.

Wanted: Man of good habits, between 30 and 50 years of age, for permanent position to take charge of rodent control section of large pest control organization. Must be familiar with typhus control, including general knowledge of building construction and some practical experience in rat-proofing and rodent control. Give educational background and employment experience for past 10 years. Include small photograph. Salary to start $6,000 per year. Write **Box P,** Employment Service, A.P.H.A.

Several vacancies in the position of district and county health officers exist in Illinois. Salary range $3,900 to $4,800 per annum, plus travel allowance. Write Roland R. Cross, M.D., Director Illinois Department of Public Health, Springfield, Ill.

Positions Wanted

Bacteriologist-immunologist, man, age 44, 25 years' experience medical bacteriology and immunology. Steady, hard worker. Best references. Teaching and public health experience. Desires warm climate. **L-475**

Pathologist, Diplomate of American Board, Director of Laboratories and Research, Consultant Federal and State Health Agencies and Professor of Public Health. Excellent references. **L-472**

Advertisement

Opportunities Available

WANTED—(a) Director of tuberculosis control division of county health department; should be trained in public health with experience in tuberculosis control or experienced in tuberculosis work with interest in public health medicine; new and rapidly expanding tuberculosis program; South. (b) Two physicians experienced in industrial, military, or public health medicine; administrative positions with national organization; one position requires considerable traveling; both involve considerable public relations. (c) Dentist trained in children's dentistry and with sufficient knowledge of public health work to be able to conduct well-rounded dental program; county of 157,000; Pacific Northwest. (d) Young woman physician to direct student health department; young women's college; preferably someone who has educational point of view and who is interested in preventive health measures as well as clinical procedures. (e) Medical consultant to develop physician restoration program; minimum four years' experience in medical field appropriate to physical rehabilitation required; Middle West. (f) Director, student health department; duties consist of charge of 50-bed infirmary and responsibility of health service to 1,700 civilian students and 300 army trainees; no surgery; Pacific Coast; $6,000. (g) Public health physician qualified in pediatrics to direct child health program; state department of health; Pacific Coast. (h) Several dentists for public health appointments in South; would be assigned to one or more counties to provide dental care for indigent children and prenatal patients. **PH4-1**, Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago.

WANTED—(a) Assistant professor of bacteriology; should be trained in pathogenic bacteriology and immunology as well as physiological bacteriology; should have some knowledge of public health problems; nine-month basis; opportunity for teaching during summer; September 1. (b) Sanitary engineer; county department of health; Michigan. (c) Dental hygienist to join staff of state department of health; duties primarily in educational field with individuals of all ages and professions; opportunity for developing community programs; East. (d) Bacteriologist and serologist; state department of health; $200–$275; South. (e) Assistant bacteriologist; municipal department of health; Southeast. (f) Dental hygienist interested in public health work; South. (g) Five sanitary engineers; new projects, Middle West. $75–$80 weekly. **PH4-2**, Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago.

WANTED—(a) Public health nurse to direct health service of small community; duties include some visiting nursing; must be qualified to serve as administrative head of entire clinic setup; Southwest. (b) Health educator, county department of health; Bachelor's degree with specialized training in health education required; $3,000; West. (c) Industrial hygiene nurse; must be qualified or interested in public health nursing; duties involve some traveling; Chicago; $3,000. (d) Industrial nurse; public health background desirable but not required; department considered one of outstanding in state; minimum starting salary, $200. (e) Several public health nurses for public schools of university town in Middle West; duties are general school nursing in coöperation with city public health department. (f) College nurse to take charge of boarding school group of approximately 60 girls of high school age and 15 faculty; day school of 250 students; staff includes school physician who is responsible for entire health program; opportunity for continuing studies toward degree or for taking special courses in public health at nearby university. (g) Director of student health program; large teaching hospital; Middle West. **PH4-3**, Medical Bureau, Burneice Larson, Director, Palmolive Building, Chicago.

Situations Wanted

Health educator; A.B. degree, eastern college; Sc.D. in Hygiene, School of Hygiene and Public Health, Johns Hopkins; four years, director of health education, state association; past several years, department of health education coeducational college; for further details, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

Dentist; D.D.S., university medical school; several years' private practice; year of postgraduate training in public health hygiene with special emphasis on public health dentistry for which he received degree of M.S.P.H.; several years, state department of health; for further details, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

Public health nurse; B.S. degree in public health nursing; past seven years, educational director and supervisor, municipal department of health; experience in public health nursing has been broad and has included teaching all types of classes; for further details, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

Bacteriologist; A.B., M.S., Ph.D. degrees; twelve years' academic experience during which time he served as professor and head of the department of bacteriology in a university medical school for eight years; past several years, director of research with one of the foundations; for further details, please write Burneice Larson, Director, Medical Bureau, Palmolive Building, Chicago.

NEWS FROM THE FIELD

AMERICAN RED CROSS IMMUNE SERUM GLOBULIN PLAN

Immune serum globulin (gamma globulin) for the prophylaxis, modification, and treatment of measles is now available for the civilian population through an appropriation by the American Red Cross as announced by Basil O'Connor, Chairman of the Central Committee of the American Red Cross. This action is in keeping with the policy of the American Red Cross to return to the American people, so far as practicable, any useful blood derivatives accumulated in excess of military needs as a result of its blood donor program.

The serum globulin will be supplied without charge to state and territorial health departments or local health departments where biologics are not supplied by the state, provided that the globulin will be distributed without charge to physicians, hospitals, and clinics, and provided that it will be administered in accordance with established standards and without any charge to the patient for the globulin.

As already announced, health departments assumed the costs of processing and distributing immune serum globulin. Under the new plan the entire cost of processing and distributing the product is now borne by the American Red Cross. The crude serum globulin fraction thus made available is derived as a by-product from processing serum albumin under Navy control. It has been declared surplus and assigned by the Navy to the American Red Cross for distribution. Eligible health agencies are requested to place their orders promptly with National Headquarters, American Red Cross, Washington, D. C., attention of Dr. G. Foard McGinnes, National Medical Director.

Normal Serum Gamma Globulin Antibodies (Human) Concentrated (Immune Serum Globulin) *

1. *What is this material?*

This preparation is a concentrate containing the antibody globulins derived from pooled normal human plasma collected by the American Red Cross.

2. *What is its potency?*

Preparations of Gamma Globulin Antibodies are standardized so that the concentration of antibody is 25 times that of the plasma pool from which it came. Since each pool is obtained from several thousand donors, variations in titer of measles antibody should be slight. Each preparation is tested for potency in the laboratory by tests for antibodies which can be readily measured. Whenever possible its potency is checked in a series of patients exposed to measles before release for general use.

3. *Stability*

This material should be kept in the icebox like other biologicals. The dating period at present is set at one year. It is probable that it will retain its potency for longer periods of time.

4. *Indications*

At present this material is released *only* for the prevention and modification of measles by passive immunization. Other possible uses are being studied, but insufficient data are available to evaluate its efficacy in these circumstances. Its use in the treatment of measles or the treatment or prophylaxis of other childhood diseases is not recommended at present.

5. *Administration and dosage*

This material may be administered when indicated to patients who have had a definite exposure to measles in the infectious stage.

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* Prepared by C. A. Janeway, M.D., Harvard Medical School, Department of Pediatrics, for distribution by the American Red Cross.

Its use to prevent or to modify the disease is at the discretion of the physician.

For prevention—A dose of .08–0.1 cc./lb. body weight should be given as soon after exposure as possible, but will be fairly effective in the first 7 days.

For modification—A dose of .02–.025 cc./lb. body weight should be given on or about the fifth day after first definite exposure.

Method of administration—The globulin is injected *intramuscularly*, preferably in the buttocks. For this, a 20- or 21-gauge needle is most satisfactory. Pull back on plunger of syringe before injection to be sure needle is not in vein, *since globulin as now prepared must not be used intravenously.*

Caution—The globulin is a concentrated protein solution, hence viscous and sticky. Do not fill syringe until prepared to make injection, otherwise syringe may become frozen.

Jaundice—Blood, plasma, and serum have been found on occasion to contain a jaundice-producing agent. Therefore, it is possible that fractions derived from plasma may contain a similar agent. Such jaundice appears 2–6 months after injection. No jaundice has been attributed to this material so far, but careful records of its use should be kept so that any cases of jaundice occurring 2–6 months after injection may be traced to the particular lot concerned.

6. *Safety*

A great many *intramuscular* injections have been given without any serious reactions and with very little local pain in the dosage recommended. Rarely, fever, irritability, or tenderness of the site may follow injection in the first 24 hours.

7. *Duration of effect*

A single dose will probably protect a child for about 3 weeks. At the end of that time, if the child is reëxposed and protection is desired, the dose should be repeated.

8. *Results of injection*

With any biological system, in which the virulence of the virus and the resistance of the host may vary considerably, some variation in results is to be expected. With the small doses used for modification, a few patients will develop typical measles; with the large dose, used for prevention, a certain number will fail to develop any evidence of measles.

Mild measles which results from a satisfactory modification may vary from a disease only slightly milder than the average case to one that exhibits only one or two of the stigmata of measles. Malaise and fever are usually markedly reduced, the catarrhal symptoms slight, and rash may be evanescent and sparse.

U. S. ARMY DEVELOPS HEALTH EDUCATION UNIT

According to an announcement from the office of the Surgeon General, U. S. Army, Washington, a Health Education Unit has been established under the Preventive Medicine Service, Office of the Surgeon General, which combines the functions of the education branches formerly under the Tropical Disease Control Division, the Sanitation and Hygiene Division, and the Venereal Disease Control Division. The primary purpose will be to continue the health education of troops after they have received their formal training, and to this end the new unit will develop educational material on the individual soldier's rôle in malaria and typhus control, prevention of trench foot, and other individual measures that protect the soldier's health. It will make use of many of the educational methods so successfully pioneered by the Venereal Disease Control Division.

Captain Granville W. Larimore, MC, former Chief of the Educational Branch, Venereal Disease Control Division, has been appointed chief of the Health Education Unit. Assisting him will be Capt. Vincent I. Hack, MAC, former Chief of the Education Branch, Sanitation and Hygiene Division.

DR. PHAIR APPOINTED ONTARIO DEPUTY MINISTER OF HEALTH

The appointment of John T. Phair, M.B., D.P.H., of Toronto, as Deputy Minister of Health to succeed the late Dr. Bernard T. McGhie, was recently announced.

Dr. Phair's most recent service has been as Chief Medical Officer of the Ontario Department of Health. He is

a graduate of the University of Toronto Faculty of Medicine in 1909, and has been connected with the City or Provincial Departments of Health since 1917, serving for many years as Chief School Medical Officer for the Province. He was elected Secretary of the Canadian Public Health Association in 1923, and has served as Honorary Secretary for a number of years. Dr. Phair is a member of the Committee on Administrative Practice of the A.P.H.A.

PROMOTIONS AMONG MEDICAL STAFF, METROPOLITAN LIFE INSURANCE COMPANY

Leroy A. Lincoln, President of the Metropolitan Life Insurance Company, New York, announced recently the promotion of Anthony J. Lanza, M.D., formerly Assistant Medical Director, to be Associate Medical Director. Dr. Lanza returned to active service with the company early in 1945 after being released from the Medical Corps, U. S. Army, in which he served for three years, attaining the rank of Colonel.

George M. Wheatley, M.D., formerly Assistant Medical Director, to be Assistant Vice-President, Welfare. Dr. Wheatley is currently Secretary of the School Health Section, A.P.H.A.

Albert O. Jimenis, M.D., and Haynes H. Fellows, M.D., formerly Assistant Medical Directors, to be Associate Medical Directors.

DR. ERICKSON APPOINTED OREGON STATE HEALTH OFFICER

The appointment of Harold M. Erickson, M.D., as State Health Officer in Oregon has been announced on the retirement of Frederick D. Stricker, M.D., who has been Secretary and State Health Officer since 1921. Dr. Erickson has been serving recently as Assistant State Health Officer. He received his M.D. from the University of Oregon Medical School in 1933.

LEGION OF MERIT TO COLONEL DREISBACH

The award of the Legion of Merit to Colonel Albert R. Dreisbach, MC, USA, formerly Director of the Division of Health and Sanitation and Vice-President of the Institute of Inter-American Affairs, was recently announced "for meritorious conduct in the performance of outstanding services during the period 1942 to 1944 as Assistant Director and Director of the Division of Health and Sanitation in the Office of the Coordinator of Inter-American Affairs." Colonel Dreisbach is at present on duty with the U. S. Army in the Panama Canal Zone.

WILLIAM FREEMAN SNOW AWARD TO GENERAL IRELAND

The award to Major General Merritte W. Ireland, USA, former Surgeon General of the Army, of the William Freeman Snow Award for Social Hygiene on February 7 has been announced. The award was established in 1937 and has been given annually by the American Social Hygiene Association "for distinguished service to humanity." General Ireland entered the Army in 1891 and served as Surgeon General from 1918 until his retirement in 1931.

AMERICAN SCIENTISTS AID EGYPTIANS

Dr. Maurice L. Tainter, Director of Research, and Chester M. Suter, Ph.D., Director of Chemical Research of the Winthrop Chemical Company, Inc., Rensselaer, N. Y. and New York City, have arrived in Cairo to assist in new research on tropical diseases on invitation of the Egyptian Government. The two American scientists will spend several months abroad investigating malaria, schistosomiasis, and a liver infestation and trachoma. As official guests of the Egyptian Government, Drs. Tainter and Suter will join Egyptian scientists and medical men in collabo-

rative efforts looking toward the development of clinical and laboratory facilities for a systematic and long range study of tropical diseases. Dr. Tainter has been associated with Winthrop since May, 1943, having previously been Professor of Pharmacology, Stanford University School of Medicine, San Francisco. Prior to his association with Winthrop in October, 1942, Dr. Suter was Professor of Organic Chemistry at Northwestern University, Evanston, Ill., and chairman of its Department of Chemistry.

CONTINUED EDUCATION COURSE FOR WATERWORKS PERSONNEL AT UNIVERSITY OF MICHIGAN

On May 22, 23, and 24, 1945, the School of Public Health of the University of Michigan, Ann Arbor, offers an in-service, non-credit, training course for waterworks personnel. It is given at the request of the Michigan Conference on Water Purification and its purpose is to provide for a comprehensive technical review, analysis, and interpretation of the basic scientific considerations involved in problems foremost in the attention of water plant operators. The instruction will be given by a special faculty group brought together for the occasion.

JOINT PROJECT FOR CARE OF EXPECTANT MOTHERS

The Wayne County Medical Society and the Detroit Department of Health are coöperating in a program of group discussion and demonstration for the expectant mother. The physician may refer patients to a series of weekly classes in antepartum education including bath demonstration, infant clothing and general child care. Admission to the classes will be by card signed by the attending physician. The discussion will be directed by qualified nurses under the supervision of the medical society, and material for demonstrations will be furnished by the society.

MICHIGAN PUBLIC HEALTH ASSOCIATION

David Littlejohn, M.D., director of the Wayne County Health Department, was chosen President-elect of the Michigan Public Health Association during its meeting in Grand Rapids, November 8–10. The following officers were chosen for the year:

President—Nathan Sinai, D.P.H., Ann Arbor
Vice-President—Pearl L. Kendrick, Sc.D., Grand Rapids
Secretary-Treasurer—Marjorie Delavan, Lansing

PERSONALS

Central States

CLIFTON HALL, M.D.,* has been appointed to the position of Chief of the Division of Tuberculosis Control, Illinois State Department of Public Health, effective January 14. Dr. Hall was the Director of the Division of Tuberculosis Control of the Kansas State Department of Public Health for five years and has been Health Officer of the local bi-county health department that serves Mecosta and Osceola Counties, with headquarters at Big Rapids, Mich., for five years.

H. V. HALVORSON, PH.D., Professor of Bacteriology at the University of Iowa, according to *Science*, has leave of absence for a year at the University of California at Berkeley, where he is working in the laboratory of PROF. W. V. CRUESS.†

HARRY L. HINSON, JR., Assistant Sanitarian, U. S. Public Health Service Reserve, has been assigned to the Division of Venereal Disease Control, Kansas State Board of Health, Topeka, to set up and operate a venereal disease central registry.

* Fellow A.P.H.A.
† Member A.P.H.A.

GERALD F. KEMPF, M.D., head of the communicable disease service at the Indianapolis City Hospital, has been appointed Superintendent of Preventive Medicine in the Indianapolis City Board of Health, effective January 1. The position is a new one and is the beginning of an expanded program of public health education. In his new capacity Dr. Kempf will also serve as assistant to Herman G. Morgan, M.D., secretary of the City Board of Health.

JOSEPH MAIER, C.P.H.,† has accepted an appointment as Public Health Engineer for the City of Port Huron, Mich.

WILLIAM FRED MAYES, M.D., who resigned as Director of the Division of Maternal and Child Welfare, State Board of Health, Topeka, Kans., to become Regional Medical Consultant to the U. S. Children's Bureau, Washington, D. C., has returned to the State Board of Health as Assistant State Health Officer and Director of Local Health Services.

KENNETH M. MORSE,* engineer in the Division, has been appointed temporarily to take charge of the Division of Industrial Hygiene in the Illinois Department of Public Health.

HARRY P. ROSS, M.D., President of the Richmond Board of Health, Indiana, has been appointed a member of the State Board of Health to fill the unexpired term of the late HENRY C. METCALF, M.D.

MAURICE J. AYRES, M.D.,† began his duties as assistant to ROLAND H. LODER, M.D.,* in the Division of Maternal and Child Health, State Department of Health of Nebraska in December. The appointment was announced by C. A. SELBY, M.D.,† Director of Health. Dr. Ayres was graduated from the School of Medicine, University of Nebraska in 1940. For the past three years he has been with the Missouri State Health Department.

FRANK S. STAFFORD, M.S.,† Director of the Division of Health and Physical Education, Indiana State Board of Health, has been given a leave of absence until July 1, 1945, to go to Washington to head the physical fitness program under the United States Commissioner of Education, JOHN W. STUDEBAKER.

I. F. THOMPSON, M.D.,* has been reappointed by the Governor of Wisconsin as member of the State Board of Health for a period of seven years.

Eastern States

FREDERICK J. BAILEY, M.D., has been appointed Health Commissioner of the City of Boston Health Department after more than 40 years' connection with the department, most recently as Deputy Commissioner of the Division of Communicable Diseases. Dr. Bailey has served as a Commander, USNR, from which duties he was temporarily released in December.

JAMES A. COLLINS, JR., M.D., was chosen President recently of the Danville, Pa., Board of Health.

HAROLD S. HUTTON,* of Newark, N. J., was honored by his associates at a dinner in February at the Montclair Golf Club on completion of 25 years with Wallace and Tiernan Company, Inc. Mr. Hutton has served with the U. S. Public Health Service and with the Engineer Corps, U. S. Army.

CAPT. THOMAS M. RIVERS, MC, USNR,* on leave as Director of the Hospital of the Rockefeller Institute, New York, N. Y., has been elected to honorary membership in the Royal Medical Society of Edinburgh, Scotland.

IRVING R. TABERSHAW, Surgeon, U. S.

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* Fellow A.P.H.A.
† Member A.P.H.A.

Public Health Service Reserve, assigned to the Division of Occupational Hygiene, Massachusetts Department of Labor and Industries, Boston, has been assigned to the Alabama Department of Public Health to serve as Director of the Division of Industrial Hygiene, Birmingham, Ala., effective January 1. Dr. Tabershow succeeds DR. GEORGE A. SHIPMAN.†

Southern States

CHARLES B. DAVIS, JR., M.D., of Wilmington, N. C., has resigned as Medical Examiner of the North Carolina Shipbuilding Company to become Director of the Division of Industrial Hygiene of the State Board of Health, effective January 1. Dr. Davis succeeded THOMAS F. VESTAL, M.D.,† of Raleigh, N. C., who has been named head of the Division of Tuberculosis Control of the State Board of Health.

MARTIN FROBISHER, JR., D.Sc.,* of the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md., has been promoted from Associate to Associate Professor in Bacteriology, as recently announced by President Isaiah Bowman.

OLLIE M. GOODLOE, M.D.,† Lexington, Ky., formerly Assistant Director, Bureau of County Health Work, for the Kentucky State Department of Health, and recently Deputy Director of the Peoria Health Department, Peoria, Ill., has been appointed Medical Director of the eastern area of the American Red Cross.

ELIAS W. LANGS, M.D.,† U. S. Public Health Service (R), former district health officer for Norfolk and Princess Anne Counties, Virginia, has been appointed Acting Director of the Division of Communicable Diseases, State Health Department, West Virginia, to succeed ALBERT M. PRICE, M.D., Charleston, W. Va., resigned. JAMES T. DUNCAN, M.D.,† Director of the Bureau of Tuberculosis, has been serving as Acting Director of the Division of Communicable Diseases since September, 1944.

JACK MASUR, M.D.,† Surgeon (R), U. S. Public Health Service, Washington, has been appointed Chief Medical Officer of the Office of Vocational Rehabilitation, Federal Security Agency, Washington, succeeding DEAN A. CLARK, M.D.,† Senior Surgeon (R), U. S. Public Health Service. Dr. Clark is on leave of absence for a special project and will shortly be transferred to a new assignment in the office of the Surgeon General, U. S. Public Health Service. Dr. Masur has his medical degree from Cornell in 1932 and was Executive Director of the Lebanon Hospital, New York, N. Y., before entering the service.

JOHN JOSEPH PHAIR, M.D., DR.P.H.,* of the School of Hygiene and Public Health, Johns Hopkins University, Baltimore, Md., has been promoted from Associate to Associate Professor in Epidemiology, as recently announced by President Isaiah Bowman.

VICTOR H. VOGEL, M.D.,† Surgeon, U. S. Public Health Service, has been designated as Assistant Chief Medical Officer of the Office of Vocational Rehabilitation, Federal Security Agency, Washington. He formerly served in the capacity of consultant in psychiatry.

MARTIN B. WOODWARD, M.D.,† Director of the Division of Vital Statistics, State Health Department, West Virginia, has resigned and is now on the staff at the Washoe County General Hospital, Reno, Nevada. No successor has yet been appointed.

Western States

PHILIP A. BEARG, M.D., has been ap-

* Fellow A.P.H.A.
† Member A.P.H.A.

pointed Health Officer of San Luis Obispo County to succeed DR. HARRISON EILERS,† who resigned to accept a similar position in Long Beach, Calif.

WILLIAM L. DENTON, M.D., Bridgeport, Calif., has been named Health Officer of Mono County.

BERNARD J. HANLEY, M.D., member of the Los Angeles, Calif., Health Department since 1926, has resigned as Director of the Bureau of Maternal and Child Hygiene of the Los Angeles City Department of Health, effective December 31, according to the Los Angeles *Times*. He has been succeeded by SAMUEL M. MARTINS, M.D., clinic supervising physician.

OLIVE WHITLOCK KLUMP,* Los Angeles, Calif., formerly nursing consultant in the Industrial Hygiene Division, U. S. Public Health Service, Washington, was recently appointed nursing consultant for the Los Angeles County Division of Industrial Hygiene.

Canada

A. E. BERRY, PH.D.,* Director of the Division of Sanitary Engineering, Ontario Department of Health, Toronto, Canada, was elected President of the Federation of Sewage Works Associations at the recent meeting in Pittsburgh.

A. LAPIERRE, M.D., D.P.H.,† of Outremont, Quebec, has been appointed Director General of the Administrative and Technical Services of the Ministry of Health and Social Welfare of the Province of Quebec. Dr. Lapierre had previously occupied this position from 1936 to 1939.

A. L. MACNABB, D.V.M.,* Director of the Division of Laboratories, Department of Health of Ontario, Canada, according to the *Canadian Public Health Journal* has been appointed to succeed DR. C. D. MCGILVRAY as Principal of the Ontario Veterinary College at Guelph, Ontario. He will assume his new duties on July 1.

Foreign

LEOPOLDO AGUERREVERE, M.D., of Caracas, Venezuela, arrived in the United States on February 7. He has been commissioned by his government to study health and sanitation conditions in this country. He plans to visit many of the large cities and confer with health officials.

MAJOR HERBERT A. HUDGINS, M.C.,† has been assigned to Headquarters, U. S. Army Forces of the Far East, Civil Affairs Section and is now stationed in the Philippines.

ARTHUR MASSEY, C.B.E., M.D., Medical Officer of Health and School Medical Officer of Coventry, England, who toured the western states in 1944 with a team from the A.P.H.A., was recently elected Chairman of the Central Council for Health Education in Great Britain. Dr. Massey is an Honorary Fellow of the A.P.H.A.

G. H. DE PAULA SOUZA, M.D., DR.P.H.,* of Sao Paulo, Brazil, is serving as Chief of the Epidemic Control Section of the United Nations Relief and Rehabilitation Administration, Washington, D. C.

The Distinguished Service Medal was recently awarded to MAJOR GEN. MORRISON C. STAYER,† formerly of Easton, Pa. The citation read "While serving as chief health officer, the Panama Canal, from September, 1939, to February, 1944, in the face of unprecedented difficulties, his untiring efforts and wise judgment resulted in the maintenance of exceptionally high standards in the Canal Zone and in the cities of Panama and Colon, and in the provision of

* Fellow A.P.H.A.
† Member A.P.H.A.